

Original Articles.

REPORT ON CASES OF MALARIAL FEVER
 TREATED IN THE RESIDENCY HOSPITAL,
 AND OF EXPERIMENTS CARRIED OUT
 IN THE TEMPORARY LABORATORY
 OF THE HYDERABĀD MEDICAL
 SCHOOL, DURING THE MONTH
 OF OCTOBER 1899.
 BY E. LAWRIE, M.B.,
 LIEUT.-COL., I.M.S.

DURING the month of October 1899 one hundred and seven cases of malarious fever were treated at the Residency Hospital. These cases were treated by Dr. Evans—who also conducted the laboratory experiments—by whom this report is submitted.

Part I : Clinical.

Six of these cases were admitted into the wards, and the remaining hundred and one were treated as out-patients. Fifty-three of the latter were under twelve years of age. In every case a microscope examination of the blood was

made with a $\frac{1}{2}$ oil immersion lens. A note was recorded of the patient's statements regarding the duration of the fever, its periodicity, and time of onset. The presence or absence of ague was also noted, as well as the condition of the spleen, the temperature and the result of the examination of the blood.

The kinds of fever, according to the patient's statements, were as follows:—

| | | | |
|---------------|-----|-----|-----|
| 1. Quotidian | ... | ... | 82 |
| 2. Tertian | ... | ... | 14 |
| 3. Irregular | ... | ... | 9 |
| 4. Continuous | .. | .. | 2 |
| | | | 107 |

In thirty-five, or 32·4 per cent., of the one hundred and seven cases the examination of the blood gave a negative result. No Laveran bodies were found. The remaining 72 cases have been tabulated in order to show the form of Laveran body found in the blood, and the type of fever the patient suffered from, as well as the condition of the spleen. Although 26 cases had the simple tertian "parasite" in the blood, and all ought clinically to have had tertian fever, the fever was quotidian in no less than 18 of them.

| Type of Laveran body found in the blood. | Number of Cases. | Type of Fever. | Condition of the Spleen. |
|---|------------------|---|---|
| Aestivo-autumnal (Hyaline bodies) (Vide Plates II and III.) | ... — | Quotidian, 35 cases Tertian, 2 cases Irregular, 7 cases Continuous, 2 cases Quotidian, 18 cases Tertian, 8 cases | ... Not enlarged. Enlarged in 4. Enlarged in 1. Enlarged in 13. Enlarged in 6. |
| Simple tertian (Vide Plate I.) | 26 | | |

Fifty-seven of the 107 cases had enlargement of the spleen, and in 79 the fever began with ague.

It is constantly stated by the plasmodists that the examination of the blood with the microscope constitutes the truly scientific, and only reliable, method of diagnosing malarious fever and its types, and this statement is adopted by most of the modern text-books on medicine and by most of the medical journals; in fact it has found general acceptance in the profession without having ever, as far as I know, been subjected to an unbiased examination.

About the seventh of the month it was decided to put the question to a crucial test by making the diagnosis of the type of the fever in every case of malarious fever in which the Laveran body was found in the blood, from the blood examination with the microscope alone, before questioning the patient or making the usual physical examination. In this way 24 cases were diagnosed as tertian, but only 5 out

of the 24 had the symptoms of tertian clinically. The rest were diagnosed as aestivo-autumnal. No diagnosis was made between the so-called malignant tertian, and the so-called malignant quotidian, of the aestivo-autumnal types, as great difficulty was experienced in differentiating between them, until nearly the end of the month. We found it impossible to discover in the literature of the subject any description of decided distinguishing morphological features between the malignant quotidian, and the malignant tertian, "parasites," even in the works of the highest recognised authorities on malarial parasitology. For instance, the following are the points of differentiation between them given by Dr. Patrick Manson in the "Tabular Statement of the Characteristics of the Various Parasites," on page 68 of his book on "Tropical Diseases":—

| Malignant Pigmented Quotidian. | Malignant Tertian. |
|-------------------------------------|-------------------------------------|
| 1. Develops in 24 hours. | 1. Develops in 48 hours. |
| 2. Active movement before maturity. | 2. Active movement before maturity. |

Malignant Pigmented Quotidian.

- | | |
|---|--|
| 3. Less active when pigment forms. | 3. Active movement remains when pigment forms. |
| 4. Very fine pigmentation. | 4. Moderately fine pigmentation. |
| 5. Pigment does not swarm. | 5. Pigment often shows oscillation. |
| 6. $\frac{1}{2}$ to $\frac{1}{3}$ the size of a red blood cell. | 6. $\frac{1}{2}$ to $\frac{2}{3}$ the size of a red blood cell. |
| 7. Spores form in an irregular heap. | 7. Spores form in irregular heaps. |
| 8. Spores 6 to 8 in number, or even more. | 8. Spores 10 to 12 in number, rarely 15 to 16. |
| 9. Crescents present. | 9. Crescents present. |
| 10. The red corpuscles shrink often. | 10. The red corpuscles shrink frequently. |
| 11. After shrinking the red corpuscles are darkly stained, or completely decolorised. | 11. After shrinking the red corpuscles are darkly stained or perfectly colourless. |

It is evident that among the eleven "characteristics of the various parasites" given by Dr. Patrick Manson, there is not one whereby the quotidian and tertian parasites could with certainty be distinguished from one another. One has "very fine" pigmentation, the other "moderately fine"; one "spores" in an "irregular heap"; the other in "irregular heaps"; in one the red cell "shrinks often," in the other it "shrinks frequently"; and so on. The only real point of

Malignant Tertian.

difference between them, and this is not exactly a microscopic feature, is that the quotidian "parasite" develops in 24 hours, whereas the tertian develops in 48. But this difference ceases to be of the slightest clinical value when, in cases such as ours, patients with the tertian "parasite" in the blood get quotidian ague.

The term aestivo-autumnal was applied by the Italians to fever cases of a type which only occurs in Italy at a certain season of the year, viz., summer and autumn. It is unmeaning when applied to any form of fever in India, seeing that the hyaline bodies and crescents which are said to be typical of the aestivo-autumnal fevers are found in the blood in cases of malarious fever which occur in this country all the year round. Moreover, the forms of the Laveran body found in the so-called summer-autumn fevers are so much alike that it is impossible to diagnose what the type of fever should be from their morphological appearances. A standard diagnostic table of the various forms of the Laveran body on which the diagnosis was based was prepared from Davidson's "Hygiene and Diseases of Warm Climates" and is reproduced here.

PLATE I.
SIMPLE TERTIAN.

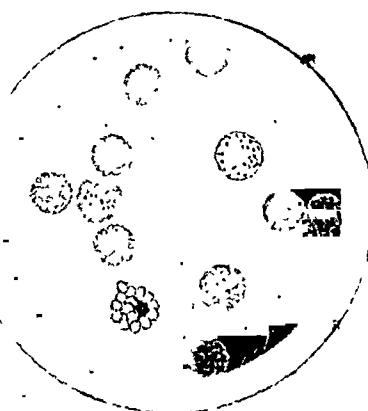


PLATE II.
MALIGNANT QUOTIDIAN.

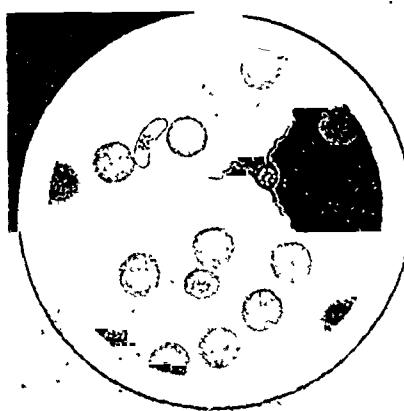


PLATE III.
MALIGNANT TERTIAN.

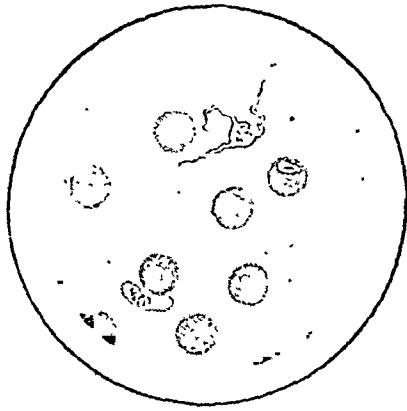


PLATE IV.
QUARTAN.

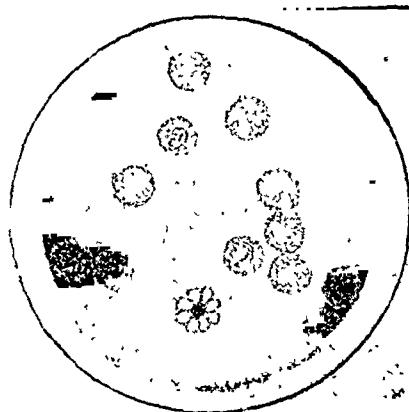


PLATE V.
CREScents ALONE.

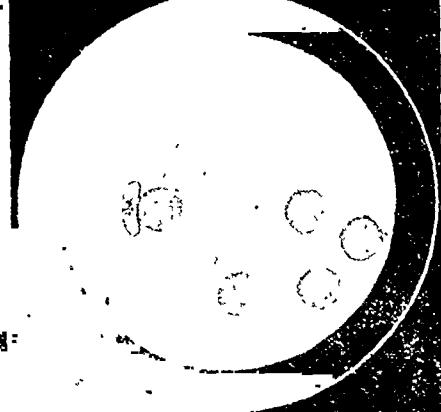
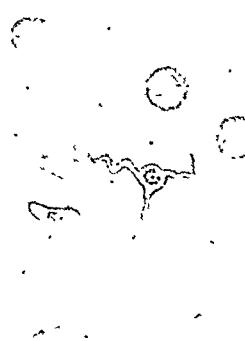


PLATE VI.
CREScent AND FLAGELLATING BODY.



Explanation of Plates I to IV.

| PLATE I. | PLATE II. | PLATE III. | PLATE IV. |
|--|---|--|--|
| <p><i>Simple Tertian.</i></p> <p>1. Amœboid movement more active. 2. Pigment delicate, fine light brown and copious. 3. Protoplasm delicate in appearance, contour indistinct. 4. Blood corpuscle swollen, larger than normal, decolorised rapidly and completely. 5. Spores numerous and small, 15 to 20.</p> | <p><i>Simple Quartan.</i></p> <p>1. Amœboid movement less active. 2. Pigment coarse, large, dark, and scanty. 3. Contour defined and distinct. 4. Blood corpuscle normal in size, decolorised slowly and incompletely. 5. Spores less numerous and larger, 6 to 12.</p> | <p><i>Malignant Tertian.</i></p> <p>1. Small and non-pigmented. 2. Annular or ring-shaped. 3. Blood corpuscle shrunken and dark in colour. 4. Forms crescents.</p> | <p><i>Malignant Quotidian.</i></p> <p>1. Amœboid movement. 2. Non-pigmented or very fine granules. 3. Blood corpuscle smaller than normal and bronze-coloured. 4. Forms crescents.</p> |

The bodies corresponding to Davidson's descriptions of the malignant quotidian "parasite" were only seen in two of the cases under report—one was irregular and the other quotidian; and they were almost exactly like bodies found in a case of quartan fever which was under treatment at the beginning of this month (November). The so-called malignant tertian form of the Laveran body, the ring-shaped haemamæba of the plasmodists is, on the other hand, extremely common, and was seen in nearly all the so-called æstivo-autumnal cases, though in all these cases except two, the fever was, clinically, either quotidian, or irregular, or continuous.

Five of the in-patients suffered from quotidian fever, and had hyaline bodies in the blood which corresponded with the malignant tertian "parasites" of the plasmodists. The remaining in-patient had tertian fever. On the day this patient, a female, was admitted into the hospital, there were found in her blood:—

- (a) A flagellating body.
- (b) An extra-corporeal body.
- (c) An intra-corporeal body.

The two latter bodies corresponded to the simple tertian type of the plasmodists. On the following day, in the early morning, bodies of the simple tertian type of all sizes were seen in the blood. She got ague at about 1-30 P.M. that day, and her temperature rose from 99, at that time, till at four o'clock in the afternoon it was 105·6. At the time the ague began, an examination of the blood showed the same kind of bodies as had been found in the early morning. At 4 P.M., when it was again examined, two rosettes were found, after prolonged search, each containing about twenty divisions. There were also many intra-corporeal bodies of all sizes, and a hyaline body of the malignant tertian type. Although this patient had simple ordinary tertian fever, her blood contained the so-called tertian parasite in all stages of development—from the rosette and hyaline body, to the large pigmented body filling the red cell. According to the recognised plasmodial theories therefore

the case, instead of being one of simple tertian ague, should have been one of double tertian, and the patient should have had fever at least every day, whereas, as a matter of fact, she had it every alternate day.

It was noticed that in most of the cases of fever in which the Laveran body found in the blood was of the so-called æstivo-autumnal type—that is, when the blood contained hyaline bodies—vomiting and occasionally diarrhoea were prominent and sometimes distressing symptoms. In only thirty-four of the 107 cases observed during the month was the fever of more than a week's duration.

Making every allowance for the fact that the month under report is the first in which a diagnosis of malarial fever and a differential diagnosis of the type of fever was attempted to be made by the microscope alone, it is clear that we obtained very little help from the microscope on either of these points. The differential diagnosis of the type of the fever according to the microscope rarely fitted in with the kind of fever from which the patient was actually suffering, while as regards the mere diagnosis of malarious fever it could have been made in almost every instance without the use of the microscope at all. In those cases in which the diagnosis was really difficult the microscope proved to be entirely untrustworthy, as those were the very cases in which nothing was found in the patients' blood. Besides this a very large amount of our time was occupied in blood examinations. Sometimes two or three slides had to be searched through, and not infrequently the search for hyaline bodies took more than half an hour, while when there was nothing abnormal in the blood it often took longer.

The report of our malarious fever cases for October proves that the true clinical type of the fever cannot be diagnosed with anything approaching certainty by means of the microscope. On the other hand the cases in which examination of the blood with the microscope is of undoubted value are cases of other disease, com-

plicated by malaria of the kind in which the Laveran body is found in the blood. For example, not long ago crescents were found in a case of pneumonia in the Afzulgunj Hospital, and the patient recovered rapidly when quinine was substituted for the medicine he had previously been taking. Another class of case in which blood examinations are of use is illustrated by the following example. I was called in to see a child of three years of age a few days ago suffering from fever and enlargement of the spleen. Two grain doses of quinine were ordered. At the end of a fortnight the patient still had fever of an almost continuous type, and great irritability of the stomach, though the spleen could no longer be felt enlarged. Examination of the blood revealed the presence of hyaline bodies which might have been, according to the plasmodists, of the malignant tertian or the malignant quotidian type. In consequence of the discovery of the hyaline bodies in the blood the dose of quinine was increased to five grains, and the child quickly got well.

Part II : Experimental.

Experiments on pigeons were carried out during October 1899 with a view to confirm or disprove Ross' theory regarding the halteridium—the halter-shaped, and the proteosoma—the spherical-shaped, form of the Laveran body found in pigeons' blood. Ross' theory is that pigeons are infected with the halteridium through ticks which are usually found on them in large numbers—in the same way that he believes man to be infected with malaria through mosquito bites.

A number of full grown pigeons were brought to the laboratory on the 23rd and 26th of September 1899, and among them four were found without halteridia or proteosoma in the blood. The four were carefully and thoroughly searched for ticks, but none could be found. They were then placed in cages under mosquito nets. Two of the four, Nos. 39 and 40, were caged with No. 12—a bird which had been in the laboratory since the 17th of June, and had never had Laveran bodies in the blood. The remaining two, Nos.

44 and 45, were caged together and kept as controls. All four were examined for Laveran bodies and also for ticks for ten days with negative results. On the 2nd of October five pigeon ticks were placed in the cage with Nos. 12, 39 and 40, and several more were introduced into this cage during the following few days. The ticks were obtained from a pigeon-house near the laboratory, where there is a flock of pigeons, every bird of which has halteridia in the blood. No ticks could be found on any of the pigeons in the laboratory.

The five pigeons, Nos. 12, 39, 40, 44 and 45, were all examined from time to time; and the two controls, Nos. 44 and 45, were frequently searched for ticks, but none were ever found. The result of the experiment is given in the following table:—

| Number of full grown pigeon. | EXPERIMENTS. | | CONTROLS. | | | |
|------------------------------|-----------------|--------------------------------------|-----------|-----------------|--------------------------------------|--|
| | Date of caging. | Date of discovery of Laveran bodies. | Number | Date of caging. | Date of discovery of Laveran bodies. | |
| 12 | Sept. 26-1899 | Oct. 30-1899 | 44 | Sept. 26-1899 | Nov. 8-1899 | |
| 39 | " 26-1899 | " 19-1899 | 45 | " 26-1899 | Oct. 32-1899 | |
| 40 | " 26-1899 | None yet. | | | | |

The table shows that proteosomata were found in the blood of No. 39 on the 19th October; in No. 45 (control) on the 23rd; in No. 12 on the 30th; in No. 44 (control) on the 8th of November; while No. 40, which has been kept in the cage with ticks, and on whose body ticks have been found, has not got proteosoma in the blood. The experiment was then repeated on young birds. On the 12th of October five unfledged young pigeons were brought to the laboratory. None of them had proteosoma in the blood, nor could ticks be found on any of them. Two of these unfledged birds, numbered 49 and 50, were placed in the same cage as Nos. 12, 39 and 40, and ticks were put on to them. The other three were kept as controls in a separate cage under a mosquito net. The next table shows the result of the experiment.

EXPERIMENTS.

CONTROLS.

| Number of young pigeon. | Date of caging. | Date of discovery of Laveran bodies in the blood. | Number of young pigeon. | Date of caging. | Date of discovery of Laveran bodies in the blood. |
|-------------------------|-----------------|---|-------------------------|-----------------|---|
| 49 | Oct. 12-1899 | ... | 51 | Oct. 12-1899 | ... |
| 50 | Oct. 12-1899 | ... | 52 | Oct. 12-1899 | Nov. 2-1899. |
| | | Died, no proteosoma found. | 53 | Oct. 12-1899 | None found, died Nov. 2-1899. |

The second table shows that the young pigeons developed proteosoma in the blood in from two to three weeks, that is in about the time that it has been found that the Laveran body usually develops in young pigeons; and they prove conclusively that ticks have nothing whatever to do with the presence of the proteosoma in birds' blood.

Towards the end of October water containing the larva of the anopheles mosquito was obtained from pools in a field two miles from the laboratory. In two days they developed into the spotted winged mosquito described by Ross. Experiments were begun at once with them; but as none were completed before the end of the month, the account will be left for the November report.

CONCLUSION.

The experiments performed in the laboratory during October 1899 confirm the view expressed in the *Indian Medical Gazette* for last November, "You can never be certain that birds of the class in which proteosomata are met with, such as sparrows, crows and pigeons, will not develop them spontaneously." Our experiments during the past year show that the Laveran body is a product of the blood in healthy birds, and not a pathogenic organism due to inoculation or infection. The significance of this body in the blood in many forms of malarious fever in man is not yet known, but our clinical observations with the microscope indicate that it is a product of the blood and not a parasite, an effect and not the cause of the fever. A very interesting case bearing on the clinical aspects of the Laveran body has just come under observation, and may be mentioned here. One of our students, who has been having malarious fever off and on for several months, was ordered to have his blood examined every day after the last attack about a month ago. On the 18th instant three of us examined his blood in the morning, and did not find any Laveran bodies. The same afternoon he had ague and fever, and next day, after the fever had passed off, the following bodies were found in his blood:—

1. Intra-corporeal body, simple tertian.
2. Extra-corporeal body, simple tertian.
3. Flagellating body, simple tertian.

The clinical type of the fever in this case was tertian—the patient had fever every second day. It consequently accorded with the type of the Laveran body found under the microscope. But the tertian bodies were of various sizes, and must have belonged to different broods of the "parasite," and so, according to the plasmodists, should have given rise to the fever every day instead of every second day. The most important point, however, of which I should like to have some explanation from the plasmodists, is that the onset of the fever preceded the appearance of the Laveran body in the blood.

A CRITICISM OF COL. LAWRIE'S EXPERIMENTS.

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CAPT., I.M.S.,

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The conclusions of Lieutenant-Colonel Lawrie's paper may be summarized as follows:—

1. "Laveran's bodies, avian and human, are not parasites.

2. Laveran's bodies are a product of the blood producing no deterioration in health.

3. Our discovery of the rosette in crow's blood proves that MacCallum's assumption at all events is false, since it is evident that even if the proteosoma were a parasite, it could not be produced in two entirely different ways. On the other hand, the rosette is proved not to be a sporulating body in bird's blood, by the fact that its spores are a great deal larger than the speck in the red cell, which is the form in which the proteosoma first appears in the blood."

Lieutenant-Colonel Lawrie is of opinion that halteridia and proteosomata are one and the same, the only difference between them being that the halteridium is halter-shaped, and the proteosoma is round; and when free in the blood, i.e., not contained in a red corpuscle, they cannot be distinguished from one another. In fact, the shape is the result of mechanical conditions, namely, the elasticity of the wall of the red cell. I do not wish to argue whether there is any difference between the halteridium and proteosoma as regards their being separate parasites, but intend for my purpose to accept Lawrie's contention that they are the same in the present instance.

The researches at Hyderabad have shown that the halteridium and the proteosoma are one and the same; and that on the removal of the mechanical restraint of the corporeal wall the halteridium assumes a circular shape. Labbé has previously pointed out that spores are formed in two rosettes at the club-shaped ends of the halteridium, the pigment being deposited close by. If the elasticity of the red corpuscle is such as to allow the parasite to assume the spherical shape, we have the spores located in the periphery as a rosette, and the pigment more or less deposited in the central area. It is evident, therefore, that the spores are not produced in two different ways, but rather that their distribution is the result of altered mechanical conditions.

The discovery of the rosette by Labbé in proteosoma dates further back than that found in Hyderabad in 1899. I may quote the following from Le Dantee's work on the sporozoa:—

"Le sang de l'alouette renferme un antre parasite dont le cycle évolutif est différent du précédent (halteridium). An début il n'y a aucune différence avec halteridium pendant le stade d'accroissement, le corps peut présenter deux formes, uniforme de poire ou une forme

amibooïde: Mais dans tous les cas, au moment où la sporulation va commencer, le corps est sphérique: il se transforme tout entier en une spore nue avec un nombre variable de sporozoites."

A second argument is put forward that the rosette cannot be a sporulating body in bird's blood, by the fact that its spores are a great deal larger than the speck in the red cell. No measurements are given of the bodies found in the red cells nor of the spores. It must be remembered that the spore after entering the red corpuscle is, for the same mechanical reasons previously alluded to, in different surroundings. It looks smaller not only on this account but also on account of the wall of the red cell, and a fine layer of haemoglobin intervening.

It is stated that even if the proteosoma were a parasite, it could not be produced in two entirely different ways. By this I understand that dimorphic evolution is impossible, and that two kinds of spores cannot be formed. I have shown that the rosette of the proteosoma and the dual rosette of halteridium are one and the same, and the altered appearance is only the result of mechanical conditions (always assuming that they are one parasite).

Dimorphism has been proved amongst the coccidia allies of the gymnosporidia, both belonging to the order of the sporozoa. By the application of this dimorphic evolution to the gymnosporidia, Ross, by his brilliant researches, has been able to demonstrate the extra corporeal phase of the malarial haemameba of birds.

In the first place we shall take a look at the spore formation of the coccidia, where we shall find two kinds of spores produced in the same animal simultaneously. For my purpose I shall state briefly the evolution of the coccidium salamandrac. This parasite is usually found in the intestinal epithelium, and has two methods of reproduction: (1) endogenous for reproduction in the individual itself; (2) exogenous intended for reproduction outside the animal's body, thereby securing the continuation of the species.

Endogenous. Phase (1).

The young coccidium in this stage is a small round body contained in an epithelial cell of the intestine. Inside the sphere is a circular nucleole, which divides into two (kariokinesis) and division continues, but is limited to about 50. Round each nucleole the protoplasm collects and finally separates, each forming a distinct body with a chromatic nucleole inside. The bodies called merozoites now become oval and finally crescentic (the crescents shape prevalent amongst the sporozoa is indeed remarkable). The crescents enter fresh epithelial cells and develop. (Vide fig. 1.)

Phase (2)—In phase 1 I mentioned that nuclear division was limited to 50 or so, but in a number of young coccidia the division is not

limited, and in consequence of this the development is different. A dark central mass is formed to the circumference, of which is attached a number of spindle-shaped bodies, which are pseudo flagellates and stain readily. They are called chromatozoids. *Vide* fig. II (male element).

Exogenous cycle.—One of these enter a young coccidium, and what is the result. It attaches itself to the nucleole, partly surrounds it, and finally fusion of the two bodies takes place. Subsequently throughout the protoplasm a considerable number of chromatic granules appear which were formerly absent. The coccidium, still deprived of a membrane, increases in size, and the chromatic granules arrange themselves peripherally, unite and form a membrane, in the interior of which is a granular mass of sporoblastic protoplasm. The coccidium, now protected by a capsule, passes out of the intestine, and under favourable conditions four spores are formed, which give rise to eight sporozoites. The sporozoite having entered the intestine of another salamander, the cycles begin over again. (*Vide* fig. III.)

For the sake of argument I have assumed Colonel Lawrie is correct in his view that proteosoma Labbé and halteridia are the same, and in having done so I have shown that the formation of the spores is the same in both, and that mechanical conditions cause the rosette in the proteosoma and the dual rosette in the halteridia. This is the endogenous evolution which has its analogue amongst the coccidia. Phase 1 is represented by the deposition of spores in the blood (merozoite). Phase 2 by the development of the flagellate (chromatozoid). The exogenous cycle, worked out by Ross, is the union of a flagellate with a proteosoma which give rise to zygotoblasts (sporozoite) found in the salivary gland of infected *Culex pipiens*. Take the malarial parasite of man as another example, say the spring tertian. It deposits spores in the blood (merozoites); it throws out flagellates (chromatozoids); it forms zygotes in the stomach wall of anopheles by the union of a flagellate (chromatozoid) with a (female) haemameba. Ross has shown that in the case of proteosoma zygotoblasts there are two kinds of sporozoites, the one thread-like and the other a small brown body. The former is supposed to cause infection by inoculation, the latter by water or some other medium. Did the Hyderabad observers exclude the possibility of infection amongst the birds experimented on?

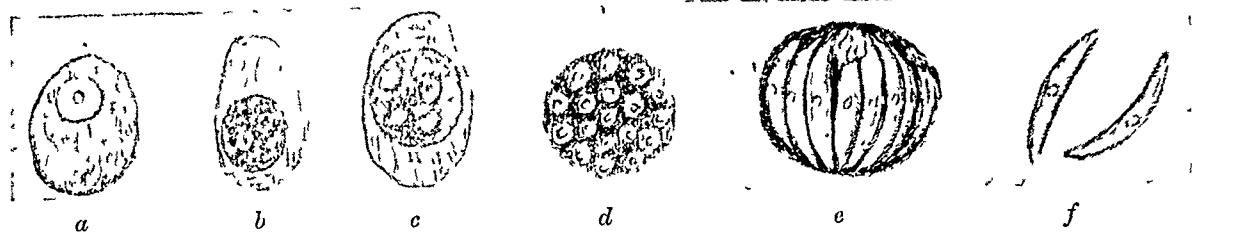
MacCallum has proved that proteosoma are composed of two elements, a hyaline cell which throws out flagella (male element), and the other a granular cell (female). I have myself seen the conjugation of the two taking place, and I have no doubt that impregnation must have taken place. Bignami and Bastianelli describe minutely the mode of development outside the human body of the spring tertian parasites.

EVOLUTION OF COCCIDIUM SALAMANDRÆ.

Endogenous Cycle.

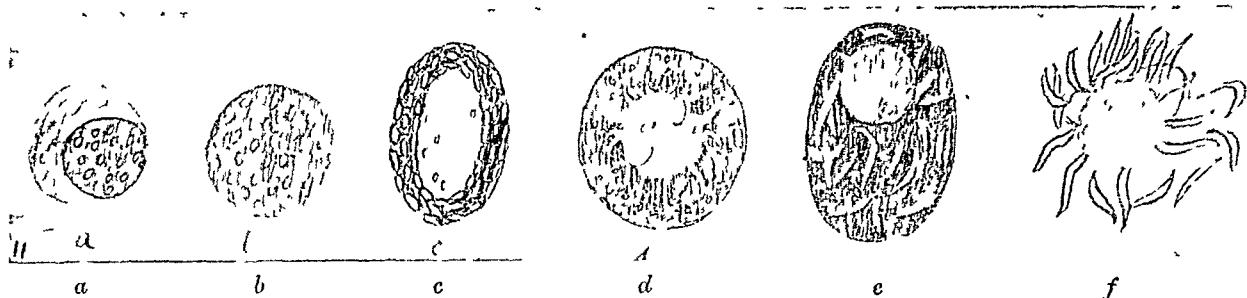
Phase (1).

Fig. (I).



Phase (2)

Fig. (II).



Exogenous Cycle.

Fig. (III).

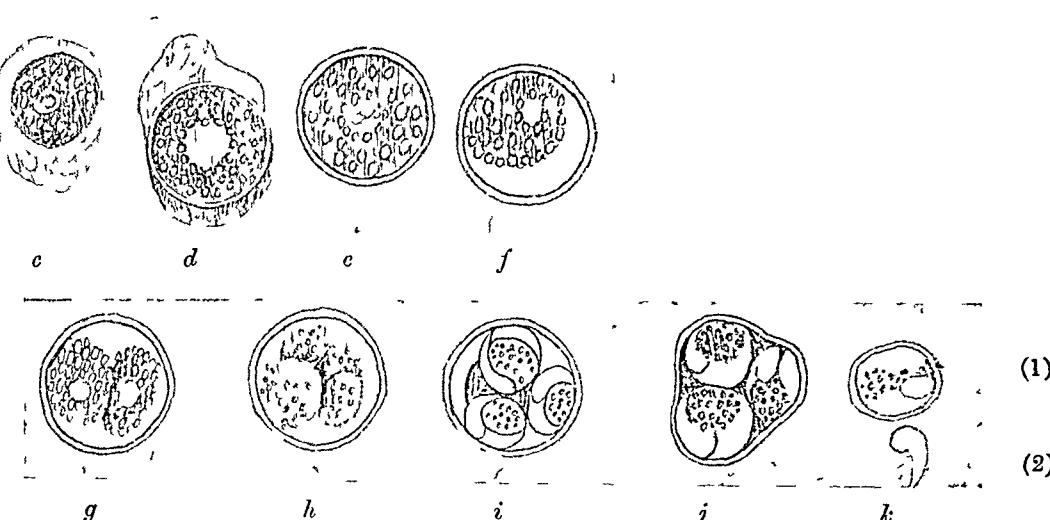
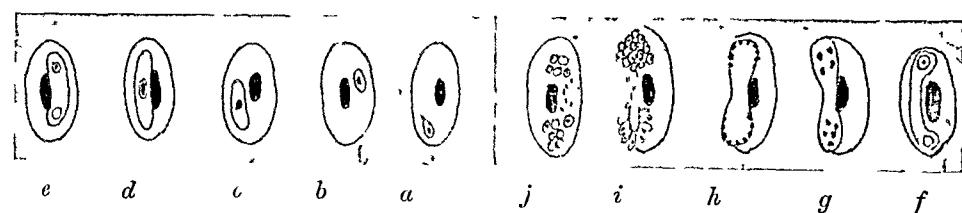
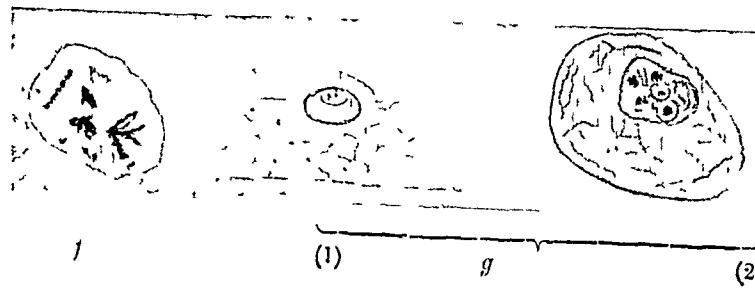
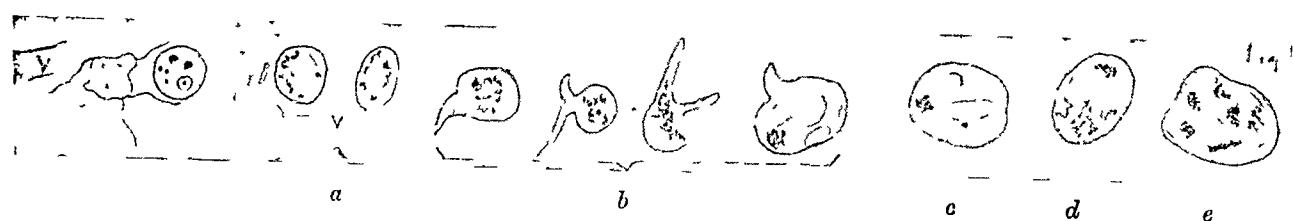
Evolution of { Halteridium and
Proteosoma of Bd.

Fig. (IV).

Halteridium Endogenous Cycle.

Phase (1).

Endogenous Cycle,
P. Labbiæ—Phase (2).Exogenous Cycle of
P. Labbiæ.

They are of two kinds, a smaller micro-gamete (male element, chromatozoid), and a larger, the micro-gamete, containing the female element. In the September number of this journal, I described certain spring tertian parasites as breaking up into two or more small pigmented spherules, each carrying pigment in active motion and containing chromatin. Other spheres became flagellates, and I suggested that the former was the female element and the latter the male (spermatozoid).

In conclusion an endeavour has been made to prove that—

(1) The rosette of the Hyderabad observers was anticipated by Labbé himself.

(2) Assuming proteosoma and halteridium to be the same, the arrangement of the spores is due to mechanical conditions similar to those explanatory of the shape of the parasite.

(3) The presence of the rosette in the proteosoma is only the endogenous cycle of the parasite, a fact which tends to confirm rather than detract from Ross' discovery of the exogenous cycle. I am indebted to my jailor, Mr. Mitchell, for the illustrations. Figs. I, II, III being taken from a paper on work done at the Pasteur Institute. Fig. IV is taken from Labbé's illustrations. Fig. V represents the exogenous evolution of proteosoma Labbé in the stomach wall of *culex pipiens*, and is taken from my notes on infected mosquitoes.

PLATE.

Fig. I.—Endogenous cycle, phase (1).

- (a, b, c). Young coccidium in epithelial cell (karziniensis).
- (d). Division is limited.
- (e, f) Development of merozoites, (f) being a merozoite which enters a fresh epithelial cell of the host.

Fig. II.—Endogenous cycle, phase (2).

- (a, b, c). Young coccidium, where nuclear division is not limited.
- (d, e). Formation of chromatoids.
- (f). Chromatoids.

Fig. III.—Exogenous cycle.

- (a, b). Chromatoid has entered young coccidium and locates itself near the central nucleole.
- (c). Fusion of chromatoid with nucleole.
- (d, j). Formation of spore (d, e, f) inside the animal (g, h, i, j, k) further development after it has left the animal.
- (k). Spore (1), sporozoite (2) two in number in each spore.

Fig. IV.—Endogenous cycle of halteridium with rosettes (a, j). (Labbé).

Fig. V.—Endogenous cycle of proteosoma phase (2) union of a chromatoid with a young proteosome.

Fig. VI.—Exogenous cycle of proteosoma in the stomach wall of *culex pipiens* infected experimentally by me.

- (a). Young zygote after impregnation.
- (b). Achrepseudopodial movements taken on to enable it to move into the stomach wall.
- (c). Vacuolation and linear striation.
- (d, e, f). Zygoblasts forming from the cytoplasm.
- (g). Cyst found in the intestine (an unusual situation) (1) low power; (2) highly magnified. Linear zygoblasts and brown spores are visible

Remarks on above paper by Dr. Lawrie.

Labbé discovered that "spores" are formed, "in two rosettes, at the club-shaped ends of the halteridium." We do not pretend to have either discovered or observed this phenomenon; and I am not aware of any description which corresponds with our drawing, from life, of "the rosette in the elliptical blood cell of a crow," in the November issue of this journal.

In the second place it was considered sufficient to state that the speck, the first visible commencement of the halteridium or proteosoma, in the red corpuscle is actually much smaller than the so-called spore of the rosette. The difference in size is so apparent that measurement is unnecessary. Moreover the objection that the speck in the red corpuscle looks smaller than it really is—which we do not admit to be the case—applies equally to all other forms of the Laveran body which are produced in its interior. It is a well known fact, however, that neither the "wall" of the red corpuscle, nor its contained haemoglobin, has any appreciable optical effect on the intracorporeal forms of the Laveran body.

In the third place Dr. Fearnside understands us to mean that "dimorphic evolution is impossible, and that two kinds of spores cannot be formed." This is not our meaning. What we mean is that even if the proteosoma were proved to be an animal parasite, it could not reproduce itself on the one hand like the coccidia, which are among the very lowest types of animal life, and on the other hand by a sexual process identical with that which obtains in the highest animals. But we go much further than this. We deny altogether that either the halteridium or the proteosoma, or any form of the Laveran body, avian or human, possesses the function of reproduction at all. The rosette is met with so very rarely in the blood either of birds or of human beings that it is impossible to regard it as the sporulating element by which reproduction is carried on, and when it is found, the proteosomata forthwith diminish instead of increasing in number. What Dr. Fearnside asserts regarding the application of dimorphic evolution to gymnosporidia only confirms our view that Ross' theory of malaria is founded entirely on assumption and not on fact.

MacCallum has proved nothing. He has made statements which have been accepted by Manson and Ross, and made use of by them without having been verified. MacCallum's momentous contribution to the parasitology of malaria—on which the whole mosquito theory now hangs—was a sexual process among the Laveran bodies of birds, which results in an offspring with a beak which destroys the blood corpuscles wholesale; but no such Laveran body exists. The body with a beak which MacCallum describes was most likely a monad, which is sometimes met with in

birds' blood, and is the only thing which in any way tallies with his description. Dr. Fearnside ought to be aware that such a breaking up as he describes, of "certain spring tertian parasites into two or more small pigmented spherules," takes place only when the blood itself breaks up, and is obviously due to mechanical causes such as the pressure of the cover-slip, etc. Finally, there is no more ground for supposing that the flagellum is a spermatozoid than there is for supposing that pseudopods are spermatozoids.

The points in controversy between ourselves and the plasmodists cannot be settled by mere assertion and counter-assertion. They should be dealt with by a Commission or Committee of impartial observers, of whom there are many in India who are fully competent to note the facts and draw correct conclusions from them. I am aware that our researches appear to go in the very teeth of Manson, Ross, Koch, and other well-known authorities on the malaria "parasite." Truth, however, is not the child of authority but of time.

TWO INTERESTING MEDICO-LEGAL CASES :

—(A) FALSE CHARGE OF DACTOITY WITH SELF-INFILCTED IN- JURIES ; (B) RAPE—QUESTION OF AGE OF THE GIRL.

By J. H. TULL-WALSH,

MAJOR, I.M.S.

FROM a number of medico-legal cases, which have come under my notice during the sixteen months I have been acting as Civil Surgeon of Murshidabad, I have selected two as of interest and worthy of permanent record.

(a) *False charge of dacoity with self-inflicted injuries.*—On the morning of August 22nd, 1898, one Jitan Ali Mir sent his nephew to report to the Police that a dacoity had been committed in his house the previous night. The nephew was only a messenger, and was subsequently acquitted of any criminal knowledge of his uncle's doings. A head constable went to Jitan's house and received the following complaint:—

During the previous night, about 12 o'clock, some eighteen or nineteen men armed with lathes, torches, lanterns, spades (kodalies), etc., had entered the house of Jitan Ali Mir. Some of the men sat on Jitan's chest, others took him by the throat. They next carried him outside the house, tied him to a pillar and branded him with torches in order to make him confess where his money was hidden. The dacoits dug up the floor of his house and took away 150 old coins, Rs. 300 in cash, utensils, ornaments, etc. Jitan Ali gave a list of the lost valuables, and named ten of the dacoits whom he swore he had recognised. The men named were arrested, and Jitan Ali Mir was sent to the Assistant-Surgeon to have his injuries examined.

The following is a copy of the report submitted to the Police by the Assistant-Surgeon:—

"There are twenty-seven marks of burning—one on left side of chest; two on left arm; one left forearm; one on left shoulder; seven on back; seven on right leg and thigh; three right arm; five on left leg and thigh. They are all of slight nature."

The District Superintendent of Police was not satisfied with this report and sent the man on to me. I examined him and reported that in my opinion the injuries were self-inflicted, and were due, not to burning or scalding, but to the application of some irritant to the skin. I enumerated solution of nitrate of silver, solution of "Bhela," soap nuts (Ritha), and solution of "Lal chitra" (*Plumbago rosea*), as likely irritants, and decided in favour of the last from the colour and general appearance of the marks which were irregularly round or oval. Most people know that "Lal chitra" is used as an abortifacient. Many do not know that it is commonly used as a counter-irritant in cases of enlarged spleen. Its action on the skin is not very marked, and of all the twenty-seven marks only one showed a slight abrasion due to destruction of the cuticle. The stains were of a reddish-brown colour and without raised or inflamed margins. The hair stood on them unsinged and uninjured. I showed that the man could reach every one of the marks with his hands. The injuries were trivial and could not have caused much, if any, pain. I gave the same evidence before the Judge. The Assistant-Surgeon got muddled and was severely handled by the pleader for the defence; and all for want of a little care in making the preliminary examination. The impudence of Jitan Ali was so great that he caused the house of each accused person to be searched and claimed and collected a quantity of property which he said belonged to him. The Judge's Court was full of these articles. The general evidence, combined with the medical evidence which was of chief importance, convinced the Jury, and Jitan Ali Mir was found guilty of bringing a false charge, etc., and sentenced to four years' imprisonment.

(b) *Rape—question of age of girl.*

A youth named Thakur Das Ghose was convicted of rape before the Sessions Judge of Berhampur and sentenced to thirty stripes. Had the girl not been a consenting party the question of age would have been immaterial. That plea being raised, it had to be decided whether the girl was under or over twelve years of age. At the trial before the Sub-divisional Officer who committed Thakur Das Ghose to the Sessions the Assistant-Surgeon gave evidence as to the commission of the act of rape. In his evidence he stated that in his opinion the girl was under twelve, and in the main his evidence was good and his conclusions satisfactory. He made how-

ever one rather serious mistake. As regards the teeth his evidence is as follows:—(1) Before the Sub-divisional Officer: “The girl has two permanent canine teeth in the lower jaw, and the two on the upper jaw have not yet fully come out. The canine teeth generally appear between eleven and twelve years of age.” (2) Before the Sessions Judge:—“All her permanent teeth have not yet appeared. The four wisdom teeth or last molars have not yet appeared, nor have the 2nd molars in either jaw, in all eight teeth wanting. The second molar teeth begin to appear from the beginning of the twelfth year to the beginning of the fourteenth year.”

About a month later than the first evidence given by the Assistant-Surgeon, the case came before the Sessions Judge. The girl was sent to me for examination as to her age. In my evidence I said:—“My opinion is that she (Sorajini) in all probability is under twelve years of age and certainly not over twelve. This opinion I have formed on the absence of development of her breasts, the absence of hair about the pubes and under the armpits and upon general appearances. In this country women attain the age of puberty about twelve. I cannot now say whether she has or has not attained the age of puberty. I examined the teeth of the girl. The four permanent canine teeth have appeared. The canine teeth appear between twelve or fifteen in Europeans. I cannot say exactly at what age they might appear in natives of this country.” The first molars were present and also the second, which was distinctly abnormal. The Assistant-Surgeon had not carefully examined the teeth or he would have seen that the second bicuspids were absent. These teeth appear about the eleventh year. The second molars do not appear until twelve and-a-half to fourteen years. The teeth in this case could not be accepted as shewing the age, because the absence of the second bicuspid would make the girl ten years of age, and the presence of the second molar would suggest that she was over twelve. The defence seized on this mistake and tried to prove that, as the second molar tooth had appeared, the girl must be over twelve. In reply to the Judge I said:—“The appearance of the teeth taken alone is not the best test of age. It must be taken with other signs. In the case of females the appearance of the breasts is often of more value than the appearance of the teeth, that is, other things being equal, I should be guided rather by the breast development. The teeth in this girl are abnormal; for instance, the second molar is present, while the second bicuspid is absent. The absence of the second bicuspid would go to show that she is under eleven years, while the presence of the second molars would indicate any age from twelve to fourteen years. In this case, therefore, I would not base an opinion as to the girl's age on the development of her teeth.”

DE IMPOTENTIA.

BY W. D. SUTHERLAND,
CAPTAIN, I.M.S.,
Civil Surgeon, Saugor.

THAT, in the East, the professors of the healing art early recognised the importance which the sexual function possesses in the eyes of the laity, is evident from the fact that one of the eight *tantras*, of which the *Ayurveda* is composed—that called *Vajikarana*—is devoted to this subject, considered from the therapeutic stand-point. Avicenna* too gave much attention to this function, and, to judge from the statements of Dr. Abel Hureau de Villeneuve,† the Chinese have for ages recognised that the treatment of those who suffer from sexual disorders is by no means to be neglected. With Hindus the subject is even of greater moment, for it is only by the procreation of male offspring, who may perform his obsequies, that the Hindu can hope to escape from eternal torment.‡ Wherefore it behoves those who practice in the East to have some knowledge of the signs, symptoms and treatment of impotence.

The subject is not, however, an easy one. It is not that the patient will not carry out orders: for—however remiss he may be on other occasions—a man is only too ready to do what he is told when his virility is in question, no matter how nauseous the drugs which he has to swallow, nor how irksome the topical therapy which he has to undergo; it is that our patients' language is not ours, and, even when we have attained to some proficiency in the vernacular, we find that their habits and their ideas are peculiar, especially in regard to sexual relations. Hence our estimate of the subjective phenomena, of which they complain, to be a just one, requires us to know something about matters of which most Europeans in the East are ignorant.

To the difficulties indicated above, we must, I think, add prejudice: in that the treatment of impotence is often based upon the assumption that it is a misfortune which ought to be remedied by a liberal exhibition of “nervine tonics” and, above all, “aphrodisiacs.” Where this is assumed, a cure may be promised in a case which is really past all cure.

To judge from what I have seen of cases of impotence in India, it is by no means every native-practitioner, who has passed through our medical schools, and who consequently is the exponent of Western medicine to nine-tenths of the population, that can treat such cases otherwise than empirically. For this, more than any other reason, I shall endeavour to point out some

* *Canticæ.*

† *De l'accouplement dans la race jaune—these de Paris.*

‡ In Sanscrit, *putra* = son: from *pu* = hell, and *tra* = to deliver.

landmarks whereby the treatment of such cases may be guided.

Diagnosis is of paramount importance: without a knowledge of what is wrong with our patient we can but pour drugs of which we know little into a body of which we know less, and thus be little, if at all, better than those who have already "treated" the case; nor shall we be able to form a reasonably correct opinion as to his chances of recovery, but shall be prone to mislead ourselves as well as him.

After listening patiently to his account of his woes and their supposed cause, it will be well that we enquire what has already been done for him. The greater number of our cases have suffered much at the hands of the vaid and the hakim, and possibly the hospital assistant, and, before they went to them they may have undergone some form of drastic treatment at the bidding of a skilful old crone, to whom popular opinion ascribes special knowledge of these matters.

It is true that in too many cases the treatment thus undergone by the patient has done him no good, but positive harm; yet it is, I think, well worth our while to listen patiently to his more or less intelligent account of what he has experienced, for we may therefrom glean some grains of knowledge as to the pitfalls which beset our path, and so avoid these.

We may be consulted by those who complain of *impotentia generandi* or of *impotentia coeundi*, as Ultzmann would say—

(A.) *Impotentia generandi* is not at all a common complaint, for the Asiatic is inclined to blame his partner, when no children are borne to him by her, and to supplant or supplement her.

The cause may lie in the male:—Aspermatism, of which the microscope will afford us proof, or in the female os:

1. An acid discharge from the canal.
2. A plug of tenacious mucus blocking up the cervical canal.
3. Metritis, salpingitis or oophoritis.

For the acid discharge we may prescribe the glycerine plug, with a douche of some alkaline solution—which method of treatment will also be of service where the cervix is "corked" with a mucous plug.

The treatment of metritis, &c., is laid down in works of gynaecology, and to these I would refer the reader.

Our cases of—

(B.) *Impotentia coeundi* may be conveniently divided into three classes:

- (1) The sexual act cannot be properly begun.
- (2) It cannot be properly continued.
- (3) It cannot be satisfactorily ended.

1. Erection is more or less imperfect, though desire is strong. For this the cause may be (a) psychical, (b) physical.

In a typical case of psychical inability to begin the sexual act, we shall find nothing

wrong with the genitals: there is no abnormality of the penis; the scrotum is more or less rugose according to the age of the patient and the temperature of the air; the inguino-scrotal reflex is prompt, as are all the other skin reflexes; the knee phenomenon is normal; when the patient micturates he sighs as the column of urine enters the prostatic urethra; pressure on the testicles gives rise to a sickening pain, equally on both sides it may be. *Per rectum* the prostate presents no abnormality, save it may be a little "cupping";* and the passage of a cold sound, well oiled, elicits well marked reflex phenomena.

The patient will tell us that he often has a morning erection, and that erotic thoughts cause erection; but that erection is absent when he most requires it.

On enquiry we shall learn that he has been reading some quack treatise on the causes of "loss of manhood," in which it is stated that the cause is "early indiscretion," whose final result is painted in the most lurid colours, and is only to be obviated by the free use of some one's famous "vital invigorator," which is sent "free from observation" on receipt of its very high price. This perusal, of what he takes to be an authoritative utterance as to his case, has filled our patient's soul with terror.

Our treatment of such a case should be on the lines laid down long ago by that most genial of philosophers, Michel de Montaigne.† We should lay down hard-and-fast rules as to diet, exercise, &c., and prescribe a *Placebo*, of whose efficacy we may assure the patient—our treatment, in short, should be suggestion.‡

(b) The physical causes for feeble or absent erection may be thus classified:—

(d) *General*.—Acting on the organism, as a whole, such as (1) syphilis, malaria, diabetes, scurvy and perhaps oxaluric dyspepsia;§ (2) drugs.

(B) *Local*.—Acting on the genitals themselves or on the genital centre in the spinal cord, as (1) exhaustion, the result of excessive stimulation, natural or otherwise.

(2) Lesions of the cord, as in meningo-myelitis following concussion, syphilis, locomotor ataxia.

(3) Temporary impediments to copulation, as hydrocele, hernia, prostatic abscess and perhaps epididymitis.

That syphilis, even in the early stages of the disease, is a cause of impotence is worthy of note. These cases are those in which the patient has been out of health, perhaps as the

* In *The Cardinal Symptoms of Urinary Disease*, § 5, Harry Fenwick lays stress on this "cupping" or "saddling" of the prostate as a valuable indication of early habits.

† *Essais*, I, XX.

‡ Cf. Frhr. v. Schrenck-Notzing: *Die Suggestionstherapie bei Krankhaften Erscheinungen des Geschlechts-sinnes*. 1892.

§ Curling: *Diseases of the Testis*.

result of debauchery, before he contracted syphilis, which has still further lowered his vitality.

When we consider the intricacy of the mechanism of erection, it is not surprising that, given a patient suffering from profound anaemia, we should find in co-ordination in this mechanism. Such a patient will present the pendulous smooth scrotum and the feeble inguino-scrotal reflex, which are the local manifestation of the general "relaxed" condition of the organism. We shall also have a history of syphilis, or at least a polymorphic symmetrical eruption, osteoscopic pains, &c., to guide us in our diagnosis as to the cause of the impotence.

Here mercury is our sheet anchor, whether administered by the mouth, or by the skin, or hypodermically. Later, iron and strychnia will be found of service, and the prognosis depends on the degree of anaemia, I believe.

It may be that we can find no signs of syphilis; but learn that the patient has had frequent attacks of fever. On palpation of the abdomen we find the spleen enlarged and more or less firm in consistence.

In such a case of course quinine is the drug on which we must rely. *Pari passu* with the diminution in the size of the spleen, the anaemia will disappear, and, while undoubtedly the red ointment is of service, I am more and more inclined to trust to blistering the splenic region,* to promote diminution in the size of the spleen. The prognosis here may be based on the degree of anaemia and the consistence of the enlarged spleen, and its response to counter-irritation. Magnes. sulph., with iron and quinine, form a good mixture for such anaemia.

Or it may be that our patient has had neither syphilis nor severe malaria—I take it that nearly every one in India has suffered from mild malarial infection after, say, five years in the country—but complains of great thirst, great appetite, and profuse urination, which symptoms may be supplemented by the statement that ants are attracted by the urine which he has voided. We examine the urine and find a high specific gravity, with a quantity of sugar—and more or less albumen it may be—to account for the patient's symptoms.

The patient will tell us that he is fairly comfortable so long as he takes codeia, or the much less expensive—and perhaps equally efficacious—crude opium; but has remarked that his sexual powers are failing, and that desire is nearly absent.

Pavy has asserted that, as the case is in process under treatment, virility will return.† Such is probably the case at home; but I do not think that in the case of Asiatic diabetes their sexual power will be found to vary inversely as the

sugar in their urine, indeed I believe that opium itself is a cause of impotence.

I would, then, give a very grave prognosis in such a case—the more grave since I believe that failure to begin the sexual act comes on later in diabetes than failure to enjoy the act, or to continue it when once begun.

Or the patient may be a *drug-taker*. In India many of our patients take some form of opium or cannabis indica, as an aphrodisiac.

The feeling of *bien être*, and the dreamy eroticism induced by these drugs, are the desiderata in the beginning; but, as time goes on—and this is, I believe, especially the case with opium—the drug is taken internally and applied locally, because of its deadening action on the sensory nerves: it is used to diminish local sexual sensibility, and thus delay the final orgasm, the sexual act being for this reason abnormally prolonged.

Or we may find none of the above-mentioned causes; but may learn that our patient has all his life been much addicted to venery, and now—at a comparatively early age—finds that his powers are gone. It may be that by some preternatural form of excitement he can conjure up a feeble erection; but he cannot obtain one which will enable him to penetrate. Early sexual excitement of all kinds is, I believe, more common in the East than in Europe, and it is not wonderful that prolonged excessive stimulation of the erection centre, oft-recurring, should bring about an exhaustion of that centre.

In such cases the indication is to inculcate the absolute necessity for a chaste habit of thought and conversation, which is unfortunately by no means easily cultivated by such patients. However we may help them by the exhibition of the bromides, with small doses of damiana.* The patient must take exercise adapted to his age and occupation, and he must, as far as he can, prevent his pelvis becoming congested. To this end a cold-water enema thrown up the bowel at night and immediately evacuated, is of service; for a loaded rectum is a bad companion, especially at night; but the native is not prone to fall in with this treatment by enemata, so we may do better by prescribing an aloe pill, or small doses of Epsom salts. I wonder why aloes are credited with causing pelvic congestion, haemorrhoids, &c. This is one of these long-accepted "facts" which stand, in spite of every-day experience, even in this nineteenth century.

The diet should be bland and non-irritating; therefore all curries and hot chutneys must be forbidden. Needless to say that all his drug-taking must be stopped, if we wish our patient to benefit by our treatment.

I would note that, when our patient is an Asiatic, or has been long resident in the East, we must

* A series of blisters of the size of a rupee, are applied over the area of splenic dulness.

† On Diabetes.

* Damiana is, I believe, useful as a local tonic to the cord in these cases, if given in small doses.

make sure that he has not syphilis, nor malaria, nor diabetes, nor scurvy before we think of attributing his condition to early indiscretion or excessive venery.

Many of our syphilitic, malarial, &c., patients may have run through the *gamut* of sexual pleasure; and yet, when once their anaemia is cured, their condition is improved, whence we may judge that Tissot and Lallemand, and those who follow their teaching, are not altogether right in their assertions.

As to other local causes, syphilitic disease may be the cause, and may be evinced externally by an old palmar pustule, or the characteristic scars of a late secondary eruption. Or we may have the signs of Argyll-Robertson and Romberg to guide us in diagnosing locomotor ataxia. In these diseases our hope lies in iodide of potassium, which we may exhibit in doses of 15 grains * four times a day.

Considering the difficulty of treatment which we always find in these diseases, our prognosis will be grave, even when the subsidence of the external signs leads us to believe that the cord lesion is purely syphilitic.

It is true that iodide of potassium will cure ataxia clinically; but, so far as I have been able to read the literature, I cannot find a case where the sexual power, when once lost, returned even when the ataxic symptoms disappeared.

In Lower Bengal, as even the native proverbs tell us, *hydrocele* is a common affection, and undoubtedly a large hydrocele will affect the sexual function, as a mechanical impediment to coitus. It follows that the radical cure should be performed in such cases. Incision and drainage is said to be sufficient; but personally I prefer excision of the free portion of the sac wall.

Hernia, too, may act as a mechanical impediment; and such a case should be operated on any of the many carefully devised methods of operating for the radical cure, being followed; as far as my experience goes, the method followed, by Kœher is a most excellent one.

2. The second variety of *impotentia coeundi*, that in which the act cannot be properly continued, is hardly definable from the third variety, in which the act cannot be satisfactorily ended, for in one form of the second variety the act is ended too soon by premature ejaculation, which may indeed take place *ante portam*. Here the ejaculation-mechanism is too irritable.

The patient has frequent erections, with the dribbling away of a few drops of prostatic mucus when vivid voluptuous imagination is indulged in. This slight *prostatorrhœa*—if I may dignify such a trivial affection by such a high-sounding term—is accompanied by pleas-

ing sensations, and naturally the patient believes that his semen is passing away from him. It is due to the gross exaggeration of which Lallemand and his school have been guilty, that the laity in Europe believe that *spermatorrhœa* is a common disease; and it is not surprising that in the East such an opinion should be held, whereas in the days of old in Palestine, even the purulent discharge of *gonorrhœa** is supposed to be seminal.

The indication in such a case is to lessen the excitability of the ejaculation-centre, and, if need be, of the glans itself. To this end the bromides, of which the potassium salt is as good as any, are of service, and may well be combined with belladonna, for the sake of the latter drug's action on the blood-supply of the cord. Pelvic congestion must be prevented by the means already indicated, and of course peripheral excitement must be guarded against.

In one case which I know of, a *weak* solution of cocaine applied to the glans *ante actum* was of service in abolishing peripheral sensibility for the time, the result being that coitus was normal as to its duration. It is noteworthy that here the local vaso-constrictor action of the drug, which is of so much service in rhinology, was not found to be a drawback.

In the other form of the second variety of *impotentia coeundi*, erection fails before ejaculation takes place. Here obviously the cause is one which directly or indirectly affects the blood supply of the organ. It may be (a) psychical, or (b) physical.

The psychical cause is the same as that described as producing failure of erection and inability to begin the act, and the treatment of such a case should be on similar line.

But I would not be taken to imply that prognosis is necessarily favourable.

The physical causes of non-duration of erection may be:

(1) As in Rouband's classical case, a dilated condition of the *vena dorsalis penis*, in consequence of which the blood returns too rapidly from the *corpora cavernosa*, and the organ becomes flaccid too soon. In Rouband's case deligation of the vein brought about a cure.

(2) Exhaustion of the erection-centre, the result of excess.

For such a case strychnia is the drug, and may be advantageously combined with damiana in large doses. Phosphorus, either in the pure state—as in capsules—or as the hypophosphites, may also be tried; but probably we shall get better results from the application to the parts of a *weak* electric current, one pole of the battery being applied to the lumbar enlargement and the other gently passed along the urethra, glans and perineum. This electrical

* Less will not be of service, I believe.

* Cf. the derivation of the word *gonorrhœa* itself.

treatment requires time, and, with Asiatic patients, this is a great drawback.

We shall also be able to do good by direct applications to the glans.

We may prescribe a course of electrification of the glans itself by weak currents; and then *ante actum* the application of an alcoholic solution of some volatile oil, Eau-de-Cologne is as good as any. Moll* recommends the tincture of cantharides internally as an aphrodisiac, and, I believe, that a small dose of the tincture taken about an hour before the act will be of service. I think we may best prevent abuse of these adjuvants if we take care to prescribe them ourselves, and restrict their employment to three occasions. If they are of service, they will be known to be so by the third trial, and then time, without their aid, will work wonders. I need not say that we must take care that they are not employed prematurely.

Another fruitful cause of unsatisfactory continuance of the act is disproportion of the organs engaged.

Where the small size of the penis is the sole cause, I fear that we must answer *non-possumus* to the patient's demand for relief; but where the other causes mentioned are at work, we can do much to put matters on a more satisfactory footing.

We can give tone to the sphincter by administering strychnia, and we have in the glycerine plug a very efficacious means of doing what we wish, and it has the advantage that it does not diminish vulvo-vaginal sensibility, nay, in one case I was inclined to believe that sensibility was increased by its use.† It should be changed daily, and cold water douches should be employed during its use, and after it has been discontinued.

It goes without saying that cases, where the patient's partner is alone in fault, are rarely seen in India.

The third variety is that in which the act cannot be satisfactorily terminated; in which the orgasm does not occur with its usual intensity.

Of this the cause may be (1) any of those which we have already discussed as being the causes of the second variety; or (2) gonorrhœa and its results.

It is not, I think, sufficiently recognised that gonorrhœa is a very important episode in the *vita sexualis* of a man; and where, as here in India, it often becomes a gleet which may last for years, the changes which the mucosa and submucosa of the urethra undergo are by no means to be lost sight of.

One has seen patients who have had a gleet of two years' standing, which has supervened on their third or fourth gonorrhœa, and it may be

guessed that, once the ulcerative process has ceased, a good deal of the mucosa has become semi-fibrous from chronic inflammation around the ulcerated surface, which itself has become a fibrous mass of cicatricial tissue.

The insensibility of the urethra to a well-oiled sound passed along it, in one of these cured gleet cases, need only be noted. Of course, where there is a stricture, or where the sound is passed roughly, instead of being "swallowed" by the canal, we shall have pain in plenty, but this does not affect what I have first stated.

The indication in such a case is to promote tissue change. If there be a stricture we must dilate it gradually, *and, I believe, we shall do a great deal of good by giving the patient the hypophosphites, and by applying small blisters or by using a mild electrical current (as one does in promoting absorption of corneal opacities).

From what has gone before, it follows that only a certain proportion of our cases can be cured. Indeed, if we bring about an improvement in the condition of 50 per cent. of our cases, we shall do well. We cannot, in the nature of things, expect to restore to the man of 45 the fire and vigour of 20; but we may reasonably hope to make the man of 45 feel like 40 and not like 65.

Should he exceed the limits of moderation, which we prescribe, he will bring about a relapse, and the last state of that man will be worse than the first. These untoward developments can, I believe, best be obviated by our laying down hard and fast rules as to coitus.

Should anyone suppose that this is scarcely the function of the physician, I would point out that the sexual relation is one of the facts of life, and therefore that directions as to its fulfilment are no more out of place than directions as to diet or attention to the *prima via*!

A man of 30 years of age, who has been treated for impotentia coeundi, and has, under treatment, regained his powers, should not attempt coitus oftener than twice a week. Similarly, a man of 40 should be content with one coitus in seven days, and a man of 45 with one coitus in ten days—given that before he became impotent, the patient's powers were "average."

Such then are the points which appear to me to be worthy of attention in regard to what is, to every man a most important matter: loss of virility, real or imagined; and, if some of the hospital assistants who are at present treating their cases of so-called "spermatorrhœa," in a more or less empiric fashion, should gather some information from what I have set down, the purpose of these lines will have been attained.

* Die conträre Sexualempfindung, 1892.

† This discovery I made accidentally and think worthy of note.

* Probably slow electrolysis will be found to be of service in such a case.

THE SYMPTOMS OF STONE IN THE KIDNEY.*

BY P. J. FREYER, M.D., M.CH.,
LIEUT.-COL., I.M.S. (Retired),
Surgeon to the Hospital.

THE patient, a female, aged twenty-five, on whom I am about to operate, is suffering from well-marked symptoms of stone in the right kidney.

The earliest symptom that she noticed was *haematuria*. Three years ago she observed that the urine was tinged with blood. This recurred periodically—the urine in the intervals being quite clear—and was, at first, unaccompanied by pain of any kind. The quantity of blood passed during the periodical attacks has continued to increase, and when the patient appeared at the out-patient department of the hospital a few days ago, the specimen of urine which she brought was quite thick with bright red blood. The blood has throughout been uniformly mixed with the urine, there being no clots or casts of the ureter. The most characteristic feature of this symptom is that it is increased by exercise of any kind, such as walking, riding a bicycle, travelling by train or omnibus, and disappears or is diminished with rest, so that latterly she has had to give up business and keep lying down most of the time.

A few weeks after the setting in of haematuria the patient began to suffer from *pain in the right loin*, which has continued, on and off, ever since. During the first year and a half the pain assumed the form of typical attacks of what is known as "renal colic," which recurred at more or less distant intervals. In these attacks the pain commenced and was fixed in the right loin radiating down the corresponding groin and back of the thigh, also across the abdomen; but it did not, as is usual in such cases, extend into the *labium majus* on that side. The pain was excruciating, causing the patient, bathed in perspiration, to roll about in agony, and was accompanied by the usual *gastro-intestinal disturbances*—nausea, vomiting, and sometimes purging. During the last eighteen months or so the pain assumed quite a different character. The attacks of renal colic ceased, and were replaced by pain of a fixed, aching character in the loin. As with the haematuria, the pain is increased by exercise and diminished by rest.

Now, what is the cause of the change in the character of the pain? My explanation is this—that the stone (if stone there be), when small, made several attempts to pass down from the pelvis of the kidney into the ureter, causing obstruction to the flow of urine, with the resulting attacks of renal colic, and that, as it grew in

size, it got fixed in one of the calices, thus ceasing to obstruct the flow.

With these two characteristic symptoms—pain and *haematuria*—persisting for three years, one's suspicions are at once directed to the presence of stone in the kidney; and on palpation it is found that there is a *tumour*, or lump, as the patient terms it, in the right lumbar region of the abdomen. This lump is ovoid in shape, smooth on its surface, about the size of two fists, more or less movable, but bound down, or anchored to the loin. On deep inspiration it moves downwards to the extent of an inch or more, returning upwards partially under the ribs on expiration. Between the fingers of the left hand, pressed deeply in the loin, and those of the right hand, placed on the abdomen in front, the tumour can be rolled about slightly. It is undoubtedly an enlarged kidney.

This latter manipulation causes much *tenderness* and gives rise to nausea; and, on pressing the fingers deeply in the ilio-costal space, just outside the edge of the erector spinae muscle, a sharp, stabbing pain is felt. A somewhat similar pain is caused by pressing the fingers into the abdomen at a point midway between the navel and the anterior superior spine of the ilium, thus indicating, probably, that the stone lies in the vicinity of the pelvis of the kidney.

Turning our attention now to the urine, it is found that, when filtered of blood, it contains *albumin*. Microscopically numerous *crystals* of *oxalate of lime* are seen, thus, apart from the significance of this symptom as confirmatory of the presence of stone, indicating its probable composition.

These, then, are the symptoms that lead us to believe that there is a stone in the right kidney of this patient.

There are other symptoms and conditions found in connection with renal calculus which are absent in this case, to which I will briefly refer.

For instance, there is no *pus in the urine*, which is rather unusual, considering the severity of some of the symptoms and the lengthened period over which they have existed. So that, obviously, there is no pyelitis or suppurative nephritis set up by the presence of the stone.

Nor is there any *mucus in the urine*, which is frequently found in such cases. I believe it was my colleague, Mr. Reginald Harrison, who first called attention to the fact that large quantities of mucus are found in even the early stages of stone in young people.

The patient is not aware of the passage of one or more small *calculi*, which would have been an important confirmatory symptom.

Strange to say, the patient has had none of those *reflex disturbances of the urinary tract* that almost invariably accompany renal calculus. She has had no increased frequency of micturition, no pain or scalding in the urethra, no

* A Clinical Lecture delivered at St. Peter's Hospital, London, October 11th, 1899.

scantiness or partial suppression of urine even during those violent attacks of renal colic from which she suffered.

There is no history of injury of the kidney, a matter that should always be inquired into for traumatism, particularly when accompanied by the effusion of blood into the substance of the kidney, is frequently followed by the development of stone.

Lastly, there is no history of heredity, or residence in a locality favouring the formation of stone. It is well known that residence in certain districts favours the development of stone; and also that stone is hereditary in families. Last year I successfully removed calculi from a young officer and his mother, and the father of this lady died from stone. Some years ago in India I removed by litholapaxy calculi from three generations—son, father, and grandfather.

The symptoms of stone in this case are, on the whole, so well pronounced that I should have no hesitation in telling you definitely that there is a calculus present in the patient's right kidney only for one consideration to which I have not as yet referred, viz., that there is a distinct history of tuberculosis in her family, a brother and sister having died of phthisis in early adult life. Now, there is no other disease of the kidney, the symptoms of which more nearly resemble those of stone than tubercle of that organ. The severity of the renal colic attacks, and of the fixed pain, the profuse haemorrhage, the marked increase of the symptoms by exercise, and the absence of other symptoms of tubercle, render it more than probable that the case is one of renal calculus and not of tubercle.

[Mr. Freyer then proceeded to explore the right kidney through an oblique lumbar incision about four and-a-half inches long, commencing at the outer margin of the erector spinae muscle and extending inwards and downwards parallel to the last rib. The transversalis fascia was rapidly reached, and the kidney, lying in its fatty capsule, exposed, three or four bleeding vessels being ligatured. A finger was then introduced and swept round the kidney, which was felt to be much enlarged and far more mobile than anticipated at the previous physical examinations. The fatty capsule was pinched up at the back, slightly incised, the two forefingers introduced, the fat torn asunder by separating them, and peeled off the posterior aspect to the kidney. The organ was then carefully felt all over, but no stone detected. After freeing the kidney from its fatty capsule, it was easily withdrawn through the wound on to the loin, and felt all over, when a hard nodule was detected in its substance close to the pelvis. An ordinary straight suture needle was passed through the kidney as far as this nodule, which was felt to be a calculus, and not a tubercular or fibrous mass which from its feel it might have been. Grasping the nodule between the tips of the

forefinger and the thumb, which encircled the kidney, a scalpel was passed through the convex border of the organ till its point grated against the stone. The wound thus made was widened by the forefinger, forceps introduced, and a stone somewhat larger than an almond, consisting of urates and oxalates, caught and extracted. The forefinger was again introduced, and the pelvis and infundibula, which were smooth and distended, explored lest there might be one or more other calculi present. Finally, a gum-elastic bougie was passed with the greatest ease through the ureter into the bladder. The wound in the kidney was brought together by three catgut sutures, and the organ returned into its former position. The muscles were brought together by deep sutures, a drainage-tube, passed down to the back of the kidney, left in, and the superficial wound brought together by silkworm gut sutures. The usual antiseptic dressings were employed.

Mr. Freyer remarked that he never employed a needle to search for stone unless a suspicious nodule be felt in the kidney, regarding the repeated puncturing of the kidney as not devoid of danger, and, as a rule, useless for detecting small calculi. When the symptoms of stone are marked he never rests satisfied with less than puncturing the kidney by a scalpel through the convex border, and inserting the tip of the index finger into the pelvis and calices in search for the stone.

He called attention to the ease with which the bougie was passed through the wound down the ureter and into the bladder in this case. His experience was that it was not always possible to do this, even when the ureter was neither stricture nor blocked by a stone, though from the light way in which it is referred to in books one would imagine it was the easiest thing in the world. It often happens that in a perfectly healthy ureter the point of the bougie is caught in a fold of the mucous membrane or at the brim of the pelvis, so that it cannot advance into the bladder, and the inexperienced might thus be led to infer that an obstruction exists when in reality the ureter is patent, as shown by the fact that blood-stained urine is passed freely after an operation.]

(The patient made uninterrupted progress and left the hospital perfectly well within a month.)

RENAL CALCULUS TREATED BY NEPHRECTOMY WITH AN UNUSUAL SEQUENCE OF EVENTS.*

BY JOHN SMYTH, M.D.,

MAJOR, I.M.S.,

Durbar Surgeon, Mysore.

MRS. L., a European, *at. 23* years, married three years, admitted to Her Highness' Hospital,

* Notes by Miss Rose Govindu Rajulu, M.D., Lady Superintendent, H.H. the Maharani's Hospital, Mysore.

Mysore, 2nd June 1899. Her statement was as follows:—

On Good Friday, 1890, whilst kneeling at prayer, she felt faint and vomited, having a catch in her right side for which she went to bed. This was her first attack. For two years following had many similar attacks which she believed were worse when present during a "period."

In 1892 was first conscious of a "lump" in the right loin.

She consulted Dr. McGann, who prescribed an ointment which aggravated the pain. Dr. McGann told her she had a floating kidney. She next consulted a Dr. Nailor, who said there were two distinct tumours, one a floating kidney, the other a phantom tumour. She was very hysterical at this time and was consuming bromides in large quantities.

In 1893 she consulted Dr. Branfoot who advised her to wear a belt, and, as there were prospects of marriage, he urged the wedding to proceed, being of opinion that pregnancy would right the kidney.

In August 1894 she got married, the "period" ceasing the very first month. For three months she had fainting fits and pain on the right loin, after which till her confinement she seems to have had fair health. She was duly confined. The "period" set in in four months, the pain on the side being as before worse during the "flow." Fifteen months later she had a very acute attack of pain with vomiting. In 1896 she consulted Drs. Maitland and Dymott in the General Hospital, Madras. They explored the side and found pus. Dr. Maitland said it was a cyst of the kidney. She left the hospital in two days, but soon returned as the pain was intolerable. The side was opened, a tube was inserted, and she finally left hospital after a stay of six weeks, the drainage tube still in the wound. But fever and the old pain continued. She returned to hospital, and Major Smyth,* I.M.S., made a fresh incision and put in a new tube. But this wound soon closed. The old one was then opened up and two tubes inserted. She left hospital in three months. The wound was then closed, and her only discomfort was a sense of heaviness in the side. She now became pregnant, and had little or no discomfort except for a large hernial protrusion at the site of the old wounds. She was confined on 9th April 1898, and at once began to suffer the old agony, and passed urine like milk. Dr. Branfoot reopened the wound in the side and inserted two tubes, keeping her in the Maternity, Madras, for three months. At the time she left the hospital there was still much discharge from the wound.

Remarks by Major J. Smyth, I.M.S.

This patient consulted me early in June 1899. A fine strong woman when I last saw her in 1897 in the General Hospital, Madras, she was now flabby and cachectic looking, in constant pain, while the discharge from the drainage tube was putrid to the last degree.

The right costo-iliac region was scarred in various places. On remarking the number of scars to her, she said a doctor had told her, she was a veritable museum of operations.

The urine was normal. Cystoscopic examination showed left urethral orifice patent; the right one bulged somewhat into the bladder, and the orifice could not be seen. I said I felt certain it was a case of renal calculus, and advised extirpation of the right kidney.

On 15th June 1899, I proceeded to remove the kidney by an incision running about an inch below and parallel to the 12th rib, just by the side of an old scar; from the posterior end of my first incision I made another one about three inches long running vertically along the edge of the quadratus lumborum. The peritoneum was very easily lacerable, so it got torn and the intestines bulged out during a fit of straining. I got them back and closed the rent with many Kœberle's forceps, she strained no more, so the bowels gave no further serious trouble. I found the kidney a mere congeries of sacs of foetid pus. It was quite immovable, firmly matted to muscle, bowel and vena cava. I explored it very carefully but could find no stone. So I proceeded to dig out the organ with my fingers. Never have I undergone harder labour! Finally the lower end was enucleated, and the pedicle isolated. But by no safe procedure could I get the upper end free. So I broke it away with my fingers, clamped the pedicle with an ovarian pedicle clamp, ligatured it in half and also as a whole, and finally tied the ureter separately. The latter proved quite unnecessary, as it was found afterwards completely obliterated and as hard as a piece of tendon. As to the amount of kidney left, I would say it was about one-sixth of the whole organ.

I now sewed up the peritoneal rents, washed out the kidney bed, closed the skin wound, and left in it a large drainage tube about four inches long.

For a day she suffered frightfully from chloroform sickness. The wound was irrigated thrice a day.

In a few days fever recurred, the discharge became very foetid, a totally unaccountable but agonising pain set in in the epigastrium, and the patient was decidedly very ill. The wound had healed except where the drainage tube lay. Her condition was critical on 26th June, i.e., eleven days after operation, so, under chloroform, I ripped open the wound, removed the pedicle stump with its ligatures, which were lying free

* I left the hospital a few days afterwards, transferring her to the care of Captain Simpson, I.M.S.—J. S.

and putrid in the bottom of the wound, and then to my surprise three calculi about as big as peas. After this she made an uninterrupted recovery, and is now (17th November 1899) in perfect health. I suppose the calculi had been embedded in the upper portion of kidney which I had been unable to remove!

On looking up the literature of nephrectomy I find a case referred to by the late Dr. Greig Smith in which he says that the upper end of the kidney could not have been removed by any process that could be called surgical so adherent was it to the vena cava, &c. It was in the *post-mortem* room Dr. Smith saw the case. I ran the risk, in my case, of overlooking the calculus (as in fact I did), by leaving a portion of the kidney behind, but I have no doubt if I had persisted in attempts at removing it, I would have opened the vena cava inferior. It was no doubt this remaining bit of rotten kidney that caused putrefaction in the stump and nearly brought about the patient's death, which was only everted by the prompt reopening, exploration and cleansing of the wound cavity.

BERI-BERI IN THE 28TH REGT., MADRAS INFANTRY.

BY M. S. EYRE, M.B..

LIEUT.-COLONEL, I.M.S.

THE regiment was stationed at Thayetmyo (Burma) from 1st January 1884 to 19th January 1885. During this period there were 5 admissions for beri-beri. Recovered, 5; sent on sick leave, 3; death, 0.

II. Madras from 27th January 1885 to 15th July 1886, admissions for beri-beri, 5; recovered, 4; sick leave, 2; died, 1.

III. Vijianagram from 19th July 1886 to December 1890, admissions for beri-beri, 48; recovered, 33; sent on sick leave, 7; deaths, 15.

IV. Upper Burma (Gungaw, Pakoko and Myingyan) from January 1891 to October 1893, admissions for beri-beri, 11; recovered, 6; deaths, 6. No cases of beri-beri occurred at Myingyan.

V. Quilon from November 1893 to December 1897, admissions for beri-beri, 3; recovered, 1; deaths, 2.

VI. Madras from January 1897 to December 1899. No cases of beri-beri.

From the above it would appear that Beri-beri is prevalent in Burma.

Although five cases occurred in Madras 1885-86, I do not think the disease can be considered as prevalent at this station. From January 1897 to December 1899 no cases of beri-beri have occurred in Madras.

Beri-beri is well-known to be prevalent and endemic at Vijianagram in the Northern Circars.

Of the three cases of beri-beri which occurred at Quilon (Travancore), one was a doubtful case, and one had suffered from beri-beri previously.

During six years' experience of the West Coast (Mangalore and Quilon,) I have not previously met with beri-beri, and do not think it is prevalent on the west-coast of India.

3. MIRROR OF HOSPITAL PRACTICE.

CASE OF ECTOPIC GESTATION. ABDOMINAL SECTION AND REMOVAL OF UNRUPTURED TUBE—RECOVERY.

BY HUBERT M. EARLE,

CAPTAIN, I.M.S.,

Late Resident Surgeon, Eden Hospital, Calcutta.

MRS. —, aged 34, was admitted into hospital on the 7th October 1899 with a previous history of having had five children and one abortion. The last child was born two years ago.

She stated that she had been regular up to August last when she missed a period.

About September 9th when her period was due she felt very bad suddenly, and this was followed by great pain shooting up from the left side over the abdomen. Two or three days later she passed a big clot. She had a second attack of faintness and pain a few days after this. Prior to the first attack she noticed the breasts were somewhat fuller than usual. Ever since the first attack she has suffered from slight irregular discharge of blood from the vagina and paroxysmal pain in the left side.

Morning sickness and ptyalism have been present both before and since the first attack.

On examination the uterus was found to be retroverted and somewhat enlarged with a soft cervix and patulous os. Lying high up and to the left of the uterus and pushing it somewhat over to the right was felt an elastic mass which was very tender on pressure.

Ectopic gestation having been diagnosed, operative interference was decided on.

The abdomen was opened by a 3" incision in the median line below the umbilicus. The incision was afterwards extended upwards another inch.

The left Fallopian tube dilated to about the size of a goose's egg was found to be lying in a bed of intestinal and omental adhesions. At first it looked as if removal of the tube would be impossible without causing some serious damage. Separation of the adhesions was however effected. The pedicle was then clamped and ligatured as quickly as possible, and the tube removed. The pedicle was then dropped back into the pelvic cavity.

During separation of the adhesions a small rupture of the tube with smart haemorrhage occurred.

(No previous leaking had taken place.) A finger was placed over this to prevent blood escaping into the abdominal cavity until the clamping of the pedicle could be effected, when the bleeding ceased. The cavity left by the removal of the tube was now sponged dry, and the abdominal wound sewn up with silkworm-gut sutures. No drainage was employed.

The sutures were removed on the eighth day.

Recovery was uneventful with the exception that the subcutaneous tissue did not unite perfectly by first intention. This was no doubt due to the extreme nervous restlessness of the patient.

On examination of the tube, the foetus, which appeared to be of from six to eight weeks' development, was found embedded in recent blood clot and lying inside a membranous sac the size of a small hen's egg. Recent blood clot about $\frac{1}{4}$ inch in thickness also surrounded the sac. The wall of the tube was somewhat thickened for the most part, but was becoming very thin at certain points where no doubt rupture would very soon have occurred in the ordinary course of events.

I am indebted to Captain Bird, I.M.S., for his valuable assistance during the operation.

EMPHYSEMA OF THE INTESTINE PRODUCED BY ROUND WORM.

BY C. J. FEARNSIDE, M.B.C.M.,
CAPTAIN, I.M.S.,

Superintendent, Central Jail, Rajahmundry.

CONVICT No. 8655, Venkiah, was admitted to hospital on 14th March 1898, complaining of fever, pain in the abdomen, and that his bowels had not moved for several days. Santonine and castor oil was administered because the ova of this parasite were found on microscopic examination of the faeces. On the 15th, 16th and 17th he was treated by santonine and castor oil with negative results. His temperature rose daily to 103° F. On the 18th his bowels moved four times, but no worms came away in the motion. On the 19th his bowels moved twice, yet no parasites were passed, and during the day he became unconscious, the abdomen distended and the urine albuminous. He died early on the morning of the 20th.

Post-mortem.—The brain was slightly congested, the ventricles containing a considerable amount of serous fluid. The lower lobes of both lungs were congested, and there were a few haemorrhagic spots superficially. Both liver and spleen were enlarged and shewed malarial pigmentation, the weights being 5*lb* and 1*lb* 14*oz* respectively. The large bowel was congested and somewhat catarrhal. About two yards above the ileo-caecal valve were two separate groups of worms, each an intricate mass.

There were twenty-one round worms in the two clusters and the longest was 14*½* inches. The bowel at this place had two deeply congested areas which were of a purple colour. At the spot where the upper group of worms lay was a raised emphysematous patch measuring five or six square centimetres and two centimetres high. The emphysema was caused by infiltration of gases from the lumen of the bowel and the constant irritation produced by the movements of the parasites over the inflamed bowel. Ulceration had commenced in one or two places round the emphysematous patch.

Remarks.—No blood examination was made, so the possibility of malaria being also a factor in fatal course of the disease cannot be excluded. Arthur and Chauson had proved that living *ascarides* contain a poison which, when injected into rabbits, causes death. Other authors have shown that the poison produced acts on the nervous system as well as on the blood. It cannot be definitely explained why toxic symptoms are not always present in these cases, but their appearance may depend on the duration of the disease, and on the number and vitality of the worms. I have had several convicts who were distinctly silly, and recover after evacuation of the parasites. One convict, No. 7165, was described by the hospital assistants as "off his head" may be mentioned. He passed 87 worms in nine days, after which his mental aberration was cured. Whether these nervous systems are purely reflex or due to poison is still a matter for discussion. It is frequently stated that one dose of santonine and castor oil is sufficient to rid the bowel of round worms—this is quite opposed to my experience, and the case above-mentioned is a typical example.

CASE OF SEPTIC ENDOCARDITIS.

UNDER THE CARE OF
G. H. A. HARRIS,
LIEUT.-COLONEL, I.M.S.

1st Physician, Medical College Hospital, Calcutta.

REPORTED BY
U. N. BRAHMACHARI, M.A., M.B.,
Resident Physician.

BHUBUN, *at.* 26, Hindu female, admitted on the 14th September 1899 for the treatment of an irregular type of fever of nearly a fortnight's duration; there was history of a vaginal discharge for about three weeks and painful swelling of the knees and ankles for about a week.

Condition on admission.—She looked very ill; face, anxious; skin, hot and dry; tongue, coated dry and tremulous, marked subsaltus tendinum; all the bigger joints of the body were tender and painful, especially so the right knee which was hot, red and felt somewhat tense. The liver

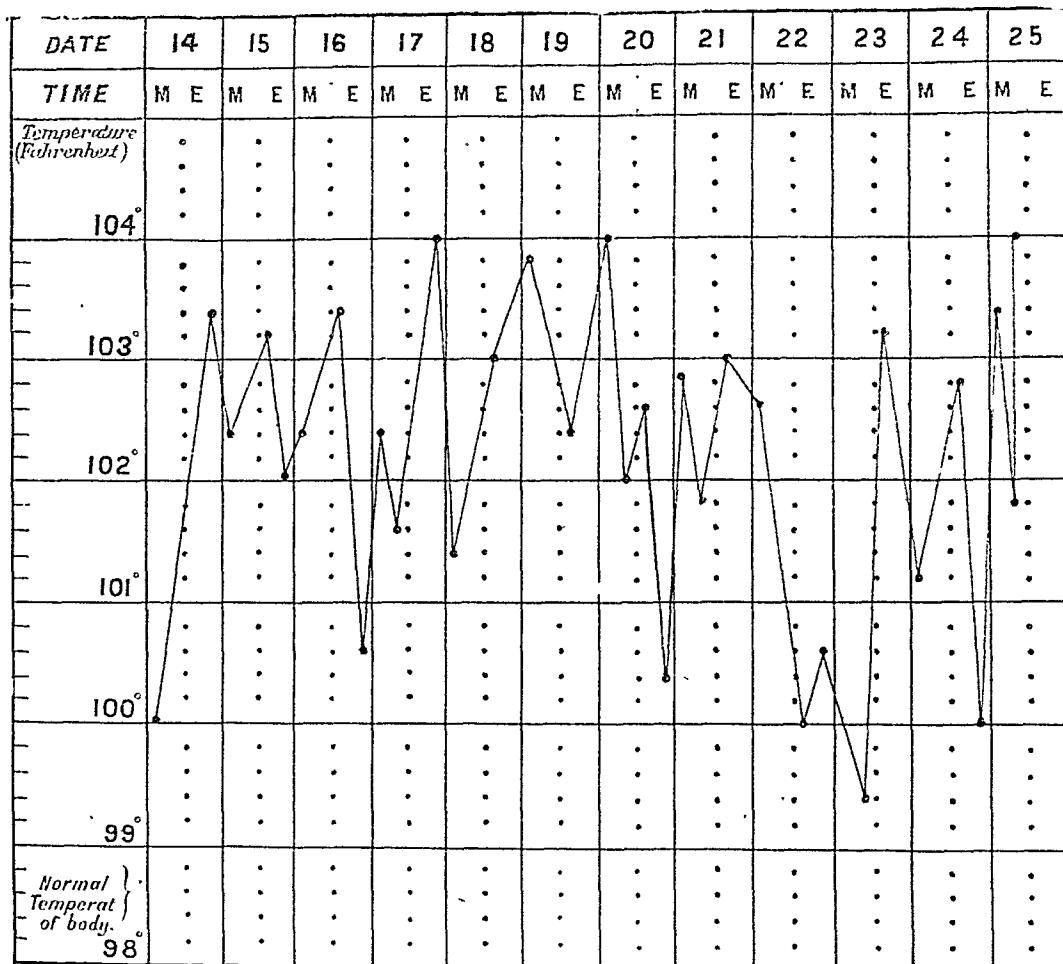
and spleen were slightly enlarged. The heart sounds were regular and somewhat sharp; no bruit or rale audible over the precordia; cardiac dulness normal. Breath sounds nothing abnormal.

Subsequent history of the case.

The patient was put on large doses of salicylate of soda for two days without the slightest benefit resulting. On the sixth day the swelling in the joints, especially the right knee,

lent fluid; between the anterior and middle cusps of the aortic valves, there was a small nodule about the size of a pea extending to half of the anterior cusp. On piercing the vegetation a hole was made in the valve and it was removed very easily; a condition similar to that of the aortic valves was found in the posterior cusp of the mitral valve; no vegetation on the tricuspid valve.

The uterus was healthy, and there was some purulent discharge from the vaginal walls; some



The temp. chart is supposed to be a 6-hour temperature chart.

diminished to a remarkable extent, but the patient began to suffer from low muttering delirium. On the seventh day acute bed sores appeared over the sacrum and inferior angles of the scapular, and the skin had an icteroid tinge. On the tenth day a few vesicles appeared over the hands and ears which soon became pustules. The heart sounds were normal throughout, the cardiac dulness was not increased; the pulse became irregular only at the last stage. The patient died on the twelfth day after admission.

On post-mortem examination the pericardium was found to contain an ounce of turbid sero-puru-

adherent bloody mucus was found in the body of uterus.

In both the knee-joints synovial membrane was vascular, especially on its free edge, and a small quantity of purulent fluid was found within these joints. There was no erosion of cartilages.

Remarks.—This case is an anomalous one, at any rate it was so during life. The interest of the case lay clinically in the fact that the local signs did not seem commensurate with the general state of the patient. Throughout the course of the case the only points upon which the diagnosis

had to be based were the presence of pronounced articular inflammation and a continued remittent type of fever which seemed to comport itself along no definite course. Although carefully sought for repeatedly, no definite signs of cardiac change could be discovered. The area of cardiac dulness remained unaltered; the sounds were as normal as any patient suffering from continued remittent fever could reasonably be expected to have. There was no evidence at any time of endocarditis maligna. Such cases with such a lack of definite proportion of symptoms to physical signs actually fall within the category of that class of cases which is described as pyæmic. It could not be said that there were any signs of multiple pyæmic suppurations, although they were carefully sought for, except the articular inflammation. There was no evidence of intracranial or intra-cerebral disease—conditions which so easily excite such an anomalous series of symptoms as were found in the present case. Careful physical examination of the lungs failed to support the view that the case might be one of acute tuberculosis. It might be said that the symptoms were explicable on the view that the case was one of ordinary remittent fever of a severe type; and indeed the patient had an enlarged spleen, but against this view the fact of pronounced articular symptoms weighed very strongly. A provisional diagnosis of endocarditis maligna was made, for it seemed to be the only condition left which could explain such an anomalous series of symptoms, but day by day the heart was carefully examined for the evidence of any abnormal signs but none were ever found. The *post-mortem* came as a surprise; it was a case of pyæmia so far as the joints were concerned, but it was also a case of endocarditis maligna of which there was abundant evidence *post-mortem*. The case is probably best regarded as infective endocarditis of the pyæmic type; this will explain both the endocardial as well as the arthritic lesions; but the absence of arterial pyæmia of Wilks which forms one of the salient features of endocarditis maligna (except the articular lesions which might be supposed to be embolic) and of any suppurative phlebitis and visceral metastatic abscesses which are almost constantly present in pyæmia is very difficult to explain. The source of infection was undoubtedly from the vagina being probably gonorrhœal; the gonococcus was not, however, demonstrated in the vaginal discharge or the vegetations. The presence of endocarditis maligna due to the gonococcus is certainly possible, and has been pointed out in a recent paper in the *British Medical Journal* to have been long recognised in the Guy's Hospital, and to have also been demonstrated by Thayer and others. Such cases of genuine gonorrhœal endocarditis are, however, characterized by marked endocardial symptoms as mentioned in Allbutt's system. On the other

hand, the case might be due to a secondary septic infection in the course of gonorrhœa; this will explain why the case had more of the symptoms of endocarditis maligna of the septic or pyæmic type than of the cardiac type.

I am indebted to the professors of the college for permission to publish this case.

ECTOPIC GESTATION—A SERIES OF EIGHT CASES.TREATED BY ABDOMINAL SECTION.*

BY A. J. STURMER,
LIEUT.-COLONEL, I.M.S.,

Superintendent, Government Maternity Hospital, Madras.

THE eight cases of ectopic gestation here reported have been treated during the past year in the Government Maternity Hospital, Madras, and, as a whole, they are instructive and interesting. I may premise my remarks by stating the routine treatment employed in the hospital in all cases of abdominal section. The abdomen is first washed with soap and water, then turpentine is rubbed over it, and again it is scrubbed thoroughly with nail brush and soap and water. After this, a pad soaked in corrosive sublimate lotion 1 in 2000 is applied, and a flannel binder is put on to keep the pad in place. Santouine gr. iii is given two nights in succession, and on the 3rd morning a dose of castor-oil. On the morning of the operation an enema is administered. After the operation the patient is moved as little as possible; if she can pass her urine, so much the better; if not, the catheter, which is a glass one, and sterilised each time before use, is passed. Before she has come out of chloroform, and whilst she is still on the operating-table, a litre of salt solution is injected into the rectum. Six hours after the operation she has an enema of beef-juice (raw) ʒii and Liq. Pancreaticus ʒii, and this is repeated every four hours for the first 24 hours, after which it is omitted. The flatus tube is passed half an hour before the second and following nutrient enemas. After 24 hours, provided there is no sickness, equal parts of milk and warm water are given, a drachm at a time; and this is gradually increased, and the water decreased, until at the end of 48 hours she is taking pure milk. For the thirst, which patients always complain of after a long operation, sips of hot water are given, and gargling the mouth with warm water. This is found to be much more efficacious than pieces of ice to suck. Should the temperature fall, as it often does, hot water bottles are applied to the sides of the chest and between the legs, and the patient is covered with a blanket; unless the restlessness is extremely great, no morphia is given.

(To be continued.)

* Another case by Captain H. M. Earle, I.M.S., is recorded at page 17.—ED., *I. M. G.*

THE
Indian Medical Gazette.
 JANUARY, 1900.

TEXAS CATTLE FEVER AND THE MOSQUITO MALARIA THEORY.

THE names of Smith and Kilbourne are everywhere known in connection with the discovery of the pathology of tick or cattle fever, but few have read their original report, buried in an American Agricultural Department Report. We therefore are glad to be able to synopsise a recent article by Theobald Smith (who is Professor of Comparative Pathology at Harvard). Smith begins by referring to Koch's recent pronouncements on the subject of malaria and tick fever. The havoc wrought by this fever has long been known to American farmers. Smith began to work at it in 1888, and soon became convinced that a corpuscle destroying parasite was at work. Laveran's discovery of the plasmodium paved the way for such a theory. In the meantime, Babès published his work on haemoglobinuria among cattle in Roumania. Babès found what he first thought was a coecus within the red corpuscles; since then Babès has admitted that his coecus is a protozoan parasite, and he has reported the presence of ticks upon Roumanian cattle. In 1889, Smith with Dr. Salmon found intraglobular parasites in the diseased animals. The acute type of the disease begins with high fever (107° or 108° F.). The animal may succumb in three to seven days; recovery is rare. There is a very rapid destruction (half a million of red corpuscles per cubic millimetre a day) going on. The spleen in these cases is found enormously engorged, and the pulp partly disintegrated. The liver is much enlarged and of a saffron or yellow hue. The kidneys are enlarged and oedematous, the bladder full of wine-red or blackish urine. Red corpuscles are not present in urine. In all organs may be found very large numbers of infected corpuscles. Starting from the acute type, we may meet all forms down to the mildest, recognisable only by the microscope. The earliest stage of intraglobular life is a motile rod-like form, whose movements can be followed in fresh blood. It is not brought out by staining. It is probable that there are two different modes of reproduction, viz., a

reproductive process adapted for rapid multiplication within the host, and one for an environment different from that of the host. That ticks carry the disease was suspected for many years. John Gamgee, however, in England, in 1838, reported it as an "absurd" theory. F. L. Killourne's experiments showed that the popular belief that the tick is necessary to the infection of pastures is well founded. The female tick will lay her eggs in captivity. The young six-legged arachnid, after emerging from the egg, fails to develop until placed on its special host; when placed on cattle growth begins at once. The first moult begins within a week, when two more legs appear. In the second week the second moult introduces the sexually mature period. Fertilization then takes place. After three weeks the ripe female falls to the ground from off the ox's skin, deposits one or two thousand eggs and dies. After emerging from the egg, the young at once seek to attach themselves to a host and a new cycle begins. Therefore, it is seen that the cattle tick is exclusively parasitic and completes its life upon one animal. It was soon noticed that healthy cattle placed on infected fields remained absolutely well for about five weeks, then suddenly the temperature rose and in a week all were dead. This period, being observed, is not from the date of exposure of the cattle, but from the date of the infection of the pasture. The tick embryos continue their development, whether cattle are present or not. This new and strange hypothesis came to Smith in a flash of inspiration: nevertheless it has since been abundantly proved that it is the progeny of the infected ticks which produces the disease. The blood parasite is the real cause. The disease can experimentally be produced by the direct injection of the infected blood without the intervention of the tick. The transmission of a disease by the progeny of an infected ectoparasite is truly one of the "fairy tales of science," and Koch with great sagacity seized upon this feature in the aetiology of the disease and proved it completely. The persistence of the parasite of Texas fever in the blood long after recovery is another remarkable fact, and for years after the immune cow has left the infected area, it can carry the infection, and its blood if injected can produce acute Texas fever. Therefore, the blood parasite of

this fever can exist independent of the tick. It also demonstrates a certain degree of immunity towards protozoon disease. On the two facts (1) the persistence of the Texas protozoon, and (2) the acquisition of immunity, Smith has built up an hypothesis of the spread of tertian malaria. This hypothesis assumes the introduction of the malarial parasite in the body of man. If the infected individual lives near standing water, to which mosquitos (or rather certain mosquitos, *anopheles*, &c.) may repair and lay their eggs, the disease may become endemic. The blood parasite is protected (*ex hypothesi*) in the non-malarial season in the blood of man. Whether mosquitos can perpetuate their own infectiousness, either by transmission of the sporozoa from brood to brood or by using some susceptible animal, is not yet known. The appearance of malaria during earthwork, digging canals, &c., Smith attributes (rather vaguely) to "accessibility of insects to chronically infected workmen owing to favourable conditions of breeding and biting." Relapses do not weaken the assumption of a possible immunity. Quinine, says Smith, interferes with the immunizing process. In the second place, relapses may only mean a temporary interference with the protective mechanism, which enables the parasite to get at the red corpuscles in defiance of the leucocytes for the time being. The clinical expression of acquired immunity does not seem to have been studied, Smith thinks that the frequent scarcity of the parasites in the peripheral circulation in chronic malarias points to their being confined by the increase of immunity to some restricted territory. Smith correctly does not assume, as many do that, because Ross has proved transmission in the case of birds that the process must necessarily be the same for human malaria. He still thinks that the peculiar distribution of cases of tertian fever in newly infected territory points to a scattering of an infected brood rather than to direct transmission from one individual to another. Both modes of dissemination may, he thinks, eventually be found in use. It may be noted that an increase of malaria is said in the States to be accompanied by an increase of mosquitos, and Smith advocates war against both. It will be remembered that Koch favoured an hypothesis like this of Smith. The question of a possible immunity to malaria is a fascinating one.

DYSENTERY VERSUS COLITIS.

SEVERAL months ago in these columns we called attention, in reviewing Dr. J. F. Gemmel's volume on Ulcerative Colitis, to the considerable prevalence and persistence of a disease which few with tropical experience would hesitate to call "dysentery" in many lunatic asylums in England. We showed that clinically the disease was identical in its forms and symptoms with the tropical affection, and moreover that Dr. J. F. Gemmel's experience of it in the Lancaster County Asylum had led him, in the work referred to, to state that it was genuine dysentery with which the asylum medical officers had to deal, and that nothing would be gained by attempting to hide that fact.

Our attention is again called to the question by the publication of an article by Dr. R. J. Legge in the July issue of the *Journal of Mental Science*, and the more so because, in one of the leading London medical papers, these cases are referred to in a column and a half of comment, in which the word dysentery is never used.

We would not think it necessary to quarrel about the use of a word, if it was only a question of medical purism; but it seems to us to be more, for the ignoring of the term dysentery leads to the ignoring of the proper means both for treatment and prevention. Moreover, the London medical press is not slow in pointing to the reproach of the prevalence of tropical dysentery in our Indian jails and asylums, while they utterly ignore the persistent prevalence of the disease in similar institutions in non-tropical Britain. Again, it is possible that the causes which underlie the prevalence of the disease in English asylums may, if the question is honestly investigated, lead to the solution of many vexed questions in the aetiology of a disease, which in tropical countries ranks only as next to malaria in importance.

Before, however, proceeding further, we must describe the disease as seen by Dr. Legge in the County Asylum, Derby. It is a disease seldom seen by private practitioners in England, and an opinion is widely held that it occurs almost exclusively in asylums and work-houses.

During the twelve months ending May 1899, no less than 54 inmates of this asylum were attacked with this disease, of which the large number of 23 died (a case death-rate of 42 per

cent.), a rate which well exceeds that of the worst forms of dysentery admitted into hospitals in India, and is six or seven times as great as the ordinary death-rate for dysentery in the jails of India. Of the 13 fatal cases at Derby, 19 were subjected to *post-mortem* examination. The changes in the large intestine ranged from well-marked patches of congestion to complete destruction of the mucosa over large areas, the worst examples being usually in the rectum. In the small intestine there were sometimes sharply cut ulcers or injected patches. In some cases the physically healthy were attacked; in others the patients were old and feeble, or suffering from organic disease. All the wards, new and old, afforded cases, irrespective of sanitary arrangements. The possible sources of infection are given as (deep well) water, milk, pork, contamination of the food with excreta of infected patients, or direct infection from one patient to another. Attention was directed to pork, by an epidemic among the asylum pigs, marked by bloody stools and urine, and showing *post-mortem* ulcers and haemorrhages of the intestinal mucosa. On the other hand, as the cooked pork and water were found, on bacteriological examination, to be sterile, and as all the milk was boiled for 15 minutes before issue, these causes may be eliminated. Is not this almost identical with Indian experience of dysentery in jails? All patients affected with colitis were removed to an isolation block, and clothing, bedding, excreta, &c., were rigidly disinfected; but, writes Dr. Legge, the epidemic did not appear to be sensibly affected. These measures are also rigidly carried out in our Indian jails, but the disease, though perhaps "sensibly affected," has certainly not disappeared from them. The only drug which appeared to "modify the haemorrhage and diarrhoea" was ipecacuanha—another point inclining us to believe in the identity of the disease with dysentery. A specimen of the ulcerated bowel was sent to the Jenner Institute, and found to contain the *bacillus enteriditis*. These bacilli are rods from $1\frac{1}{2}$ to 5 micro-millimetres in length; they readily form spores and pure cultures are obtained in milk at 37°c. in an atmosphere deprived of oxygen. Three or four minutes boiling will kill the spores from an artificial culture, but those from the intestinal contents require ten minutes boiling to kill them. An important point is that the organism

varies much in virulence according to its sporing or non-sporing state. Its pathogenic effects on rodents are very marked, viz., gangrene of the subcutaneous tissues, &c. In the Derby epidemic, typical cultures of the bacillus were obtained, and Dr. Legge states that while a virulent form of this bacillus was the cause of the disease, a non-virulent form of the same bacillus was found in the floor dust of the wards. It appeared to him that the bacillus present in the dust was capable of producing the disease in feeble persons and less so in healthy persons.

This finding of the *bacillus enteriditis* is satisfactory as far as it goes, but when we look up the history of this bacillus, we find to it attributed a *totally different kind of outbreak*. It is the same organism, as the *Lancet* points out, as was found by Klein in the severe and sudden "rice-pudding epidemic" in St. Bartholomew's Hospital in March 1898; but we cannot agree with our contemporary that the two epidemics in any way resemble each other. On referring to the *Lancet* for 7th January 1899, we find Dr. Andrewe's description of the hospital outbreak (or rather outbreaks, as there have been more than one). In St. Bartholomew's the outbreaks were sudden and non-fatal; they were purely diarrhoea (with mucus and blood in only a very few cases). In one instance as many as 146 cases were attacked in one night. In the last outbreak the rice-pudding was strongly incriminated, and strangely though the organism was found in five samples out of six of the milk supplied yet the patients getting only milk were not attacked—only those who consumed the milk when made up as rice-pudding. If then the observations at Derby Asylum are correct, we have the same organism, the *bacillus enteriditis*, capable of producing two totally different forms of disease; in one case, a sudden widespread and non-fatal outbreak of diarrhoea; in the other, a persistent highly fatal form of dysentery or colitis. It is evident that much more investigation is needed before it can be accepted that this organism is capable of producing such very different results, nor has anything yet been discovered as to how the organism found its way into the bowels of the Derby Asylum patients; the milk and water are reported as "sterile."

It is evident then that these cases will not help us much in finding out the cause of the persis-

tence of dysentery in many of our Indian jails. As regards the latter we know about as much and as little as our *confrères* at home know of the colitis of English asylums. Considering the vast opportunities for laboratory work at home, it is more than disappointing to find that so little has yet been discovered with regard to many diseases common to both countries. Many examples might be quoted. For instance, it is considered at home a grave reproach that in the tropics we know so little of the cause of beri-beri; yet the same disease has existed in a Dublin Asylum for five years past, and has been investigated and examined by bacteriologists and experts, British and Continental, yet nothing definite has been discovered to account for its prevalence in that city. It is a common subject for editorial articles in the London medical press to dilate upon the ignorance of the profession on diseases in the tropics; but seriously, are we (without any opportunity for research) any worse off than the profession in Europe? We are told we do not know what dysentery is. We admit the impeachment, but reply that neither does the profession at home, though it exists under another name in many asylums in Great Britain. After all we know as much about dysentery as the profession at home do of gout.

LONDON LETTER.

THE WAR IN SOUTH AFRICA.

At the present moment all our thoughts are turned on South Africa. The critical moment has arrived. The tide has reached its lowest ebb, and now the flood-tide of success ought to set in strong. With the arrival of our transports momentarily expected, the army corps will be put into marching order, and the relief of beleaguered Ladysmith cannot long be delayed. So far our troops have held their own better than there was reason to expect, and, with the arrival of fresh troops, there will be fresh hope and energy. The skirmishes and small battles, which have already taken place, have resulted in a large—large as compared with the number engaged—loss of life and disablement by wounds. As far as can be judged from the scanty tidings which have been permitted to reach us, the arrangements for treating the wounded on our side have been sufficient. Not so on the Boer side. Their arrangements and staff for meeting, this inevitable contingency of war appear to be

most primitive and defective, and they have been compelled to hand over a large contingent of our wounded to our own care, while we have also given aid to their wounded on a large and generous scale. It is to be hoped that, when this unfortunate struggle is over, the remembrance of this will serve to soften angry feelings and obliterate bitter recollections.

THE MEDICAL ARRANGEMENTS.

The preparations for housing and treating our sick and wounded have been the subject of great thought and labour. Hospital ships have been fitted out, regardless of expense, at the public expense for receiving the victims of war from the front, and private benevolence is busy in organising ambulance for service on both sides. The ladies of America are sending a vessel to the Cape, provided with agencies and appliances for the comfort and cure of the wounded and suffering. A series of hospitals has been provided for establishment at favourable points at the front and line of communications, and the Royal Army Medical Corps has had its resource strained to the full in arranging this very necessary element in our progress and operations.

The mobilization of an Army Corps includes a liberal provision for the care of the sick and wounded, and there is every reason to conclude that this part of the process has been efficiently conducted. The Army Medical Department has been for some time considerably under its proper strength; but sufficient help has been obtained by entertaining civilian doctors to liberate army surgeons for duty at the front, without any sacrifice of the interests of those of our troops who are not engaged in the military arrangements at the Cape.

THE UNPOPULARITY OF THE R. A. M. C.

In the face of the alacrity which has been displayed by young doctors in accepting, on very reasonable terms, temporary service of this kind, the continued hesitation which they display to enter the ranks of the Royal Army Medical Corps is curious. The competitions which have taken place since the Corps was granted the concession as to rank and status, which were so long and eagerly fought for, have not indicated any great inclination to enjoy the advantages which these concessions were meant to bestow, and resort has been largely had to nominations in order to supple-

ment the lack of men obtained by examination. The question arises, therefore, if good men can be obtained by advertisement and nomination, why not by competitive examination? One reason which has been assigned for this anomaly is that the examination as at present conducted is prohibitive, that the necessity of reverting to studies, such as elementary anatomy, chemistry, and pharmacy which were laid aside at an early age of their special education, is distasteful and irksome. If men were examined only in practical subjects—those which constituted the climax of their education career, and the real evidence of professional competence—there would be no lack of candidates. There is something in this contention, and it seems a pity that the view so put forth should not receive attention and trial.

SIR WILLIAM MACCORMACK.

The offer made by the President of the Royal College of Surgeons to proceed to the Cape in the capacity of Consulting Surgeon has been accepted by Government with graceful alacrity; and, after a very hearty "send off" at Waterloo by the students of St. Thomas's Hospital and probably other schools, Sir William proceeded from Southampton by the Union liner *Bretton*. He is to be associated in his work with two other distinguished surgeons—Messrs. Frederick Treves and G. Makins. Great satisfaction has been expressed by the medical profession and public with this exhibition of devotion and zeal on the part of men to whom absence from London must mean serious sacrifice.

WOUND PENSIONS.

The old formula—"equivalent or nearly equivalent to the loss of a limb"—has often greatly puzzled and exercised medical boards. In many cases of injury—say, of eye, or ear, or brain, or spinal cord—it was almost impossible to arrive at a satisfactory conclusion, as to whether damage, structural or functional, not impairing locomotion, but seriously affecting comfort and capacity could be conscientiously pronounced to be "equivalent, or nearly equivalent, etc." The foundation of the phrase was altogether faulty. It included one effect of injury and left every other effect out. Hardship and injustice were no doubt frequently and involuntarily imposed and committed, and too much was left to depend on the imagination and good nature of the board. Recently a more rational procedure has been prescribed by

Royal Warrant. This is the outcome of the deliberation committee which sat at the office of the Director-General of the Army Medical Department for the purpose of considering the whole matter. It has been ruled that "an officer who has received in action a bodily injury, certified by the regulated military authority to be very severe, though not equivalent to the loss of a limb, may, at the discretion of our Secretary of State, be allowed a gratuity of from three to twelve months' full pay of the appointment held by him at the time of the injury.

"If at, or after, the expiration of the period for which the gratuity has been awarded, the injury be certified to be likely to be permanent in its effects, the officer may be granted a temporary pension at half the rates prescribed in the scale laid down.

"Such pension shall be renewable from year to year at the discretion of our Secretary of State, according to subsequent reports of the regulated military authority.

"If the temporary pension is renewed for five years, and the bodily disability continues, the pension may be converted into a permanent pension."

It is explained that the gratuities include all emoluments of the nature of pay of which the officer was actually in receipt when wounded, except double pay for service on the West Coast of Africa. Allowances are excluded.

The old formula has been retained for cases to which it clearly applies; but the new terms are more elastic and will embrace many doubtful, but still deserving, cases. The alteration in the rules has been made applicable to India. Fortunately, or unfortunately, the warrant has been issued in time to apply to cases—of which there are likely to be very many—resulting from military operations in South Africa.

9th November, 1899.

K. McL.

Current Topics.

MAJOR L. A. WADDELL, M.B., LLD., I.M.S., has resigned the Editorship of *The Indian Medical Gazette*, and Major W. J. Buchanan, B.A., M.B., I.M.S., who has been acting as Editor since last August, becomes Editor. It is probable that Captain D. M. Moir, I.M.S., on his return from furlough, will join as Joint-Editor. Major Waddell's connection with the *Gazette* is a long

one, and our readers are much indebted to him for the many and various improvements, which his well known literary skill and experience have enabled him to effect in the *Gazette*.

We are glad to be able to state that a large number of new subscribers have joined, and that we have enlisted the services of many new contributors for the ensuing year. We again ask medical men in India to continue to send us contributions on all subjects of medical and surgical interest in India, and especially on the many yet unsolved problems of tropical pathology.

THE PASTEUR FILTER.

In our October issue we quoted some remarks from an article by a French naval medical officer disparaging the Pasteur Filter. We are glad to see that the allegations of Dr. Nollet have been shown by a correspondent of the *Lancet* to be devoid of foundation. Instead of what Dr. Nollet has stated the real facts appear to be the very reverse, so far from typhoid at Cherburgh being due to a failure of the filters, the troops were free from typhoid while they used them, and the epidemic occurred during a period of disuse. Professor Vaillard, of the *Ecole du Val du Grace*, a lecturer on epidemiology, has published a complete report on typhoid at Cherburgh, and in his words the use of these filters has "caused a remarkable, considerable, and constant diminution in the mortality from typhoid fever" among the troops, while the civil population, supplied with the same water, but without the filters, suffered as much as before. We are very glad to find that Dr. Nollet's statements are untrue; for we have a profound belief in the value of the Pasteur Filter, and we believe that its extended use will materially effect the incidence of typhoid fever in the Army in India.

A BATTALION MEDICINE CHEST.

In a recent issue we referred to the necessity which exists of providing detachments of troops with medical appliances in a portable form, the section field hospital being too big and needing too much transport for rapidly advancing bodies of troops. A similar want has been found in the American Army, and what is called a "battalion medicine chest" has been devised. The box is $2\frac{1}{2}$ feet long, $1\frac{1}{2}$ feet square at the end, and can easily be carried by two coolies. It carries medicines sufficient for 400 men for 90 days and ample dressings for a possible casualty list of 25 per cent. of the command.

VACCINATION IN BENGAL.

In the triennial report on vaccination in Bengal, Major H. J. Dyson, I.M.S., reports that the department was worked under extraordinary disadvantages, owing to the fact that there were no Deputy Sanitary Commissioners during the

greater part of 1897-98 and 1899. There were for the whole of the Province of Bengal about 3,000 vaccinators, who each performed on the average 620 vaccinations in each year; this being a slight increase over the preceding triennium. In 16 districts a decrease is shown, and in 33 an increase. The explanations are different and not in every case satisfactory. It is doubtful, indeed, if any explanation is possible for small variations of a total from year to year. An increase of 130,006 primary vaccinations is satisfactory, which is more than can be said for the insertion success rate of 97.3 per cent., which is certainly a "dishonest" statement, as Major Dyson says. During the past year "the system in force in the Punjab of making three 'punctures' of vaccination on each arm was introduced" into Bengal. We are sorry to see no explanation for this innovation, nor do we understand why four marks are considered insufficient. In the Punjab, as we said last month, three marks are considered "successful vaccination," and in England (which we have no desire, however, to imitate in this respect) the law allows a certificate of successful vaccination for only one mark. Major Dyson concludes that, though vaccination is making fair progress in Bengal, yet there is much opposition in many districts, particularly in Behar and Puri. In some districts inoculation is still preferred. Major Dyson is inclined to look upon a Compulsory Vaccination Act as "the only effective remedy." There can be no doubt that the absence of Deputy Sanitary Commissioner is felt in the matter of supervision, for without strict supervision the vaccinating staff will not work satisfactorily, and Civil Surgeons have very frequently other duties which prevent them supervising vaccination over the whole of their districts. Major Dyson looks with favour on a proposal to start a school for teaching vaccinators for employment in Orissa, the most backward part of the province in respect of vaccination.

PRISON DIETARIES IN INDIA AND SCOTLAND COMPARED.

In the elaborate report on prison dietaries furnished by Dr. J. Crawford Dunlop to the Scotch Prison Commission, recently published, we find much of interest. Dr. Dunlop concludes that the food requirements of the prison labourer do not exceed those of the free labourer. Using the standard of "moderate work," as applicable to the Scotch prisoner, he shows that to produce the necessary 3,100 calories, a diet as follows is necessary, viz., 120 grammes of protein, 550 grammes of carbohydrates, and 38 grammes of fat. It will be interesting to compare this with the nutritive values of certain Indian prison dietaries. Our readers will remember that this question was fully discussed in these columns some years ago, *apropos* of the

late Mr. E. Hart's ill-considered and ignorant strictures upon Indian prisons. The nutritive value of the Bengal scale diet in terms of nitrogen and carbon was 250 N. and 5,777 grs. C. or 4 oz. proteids, 1 oz. fats, 26 oz. carbohydrates.* In North-Western Provinces the figures were N. 280 grains and carbon 5,268. Turning the above figures into grammes, to compare with those of Dr. Dunlop, the Bengal diet-scales give 116 grammes of protein, 725 grammes of carbohydrates, and 29 grammes of fat, compared with Dr. Dunlop's 120, 550, and 38 grammes of the same substances. Now, when we consider that the average body-weight of a Scotch prisoner is about 150 lbs. (68 kilos), and the average body-weight of a Bengal or Behar prisoner is only 110 lbs., and probably 115 lbs. in the North Western Provinces, it will be seen that no objection on the score of nutritive value of Indian prison dietaries can be raised with any show of reason.

THE SERUM TREATMENT OF DYSENTERY.

In the September issue of this *Gazette* a note was given on certain Italian observations on the serum treatment of dysentery. It is now reported that Dr. Kitasato, the well-known Japanese bacteriologist, who discovered the plague bacillus, has "conclusively established the efficiency of his method of inoculation in the treatment of dysentery." As a result of 50 or 60 cases, only one terminated fatally. Inoculation, it is said, must be resorted to speedily after the symptoms of dysentery set in. It is obvious that the above results are worth nothing in themselves; without an accurate description of the type of dysentery treated. It must be within the experience of every medical man in India to treat often 100 consecutive cases of dysentery successfully, without a single death. Even in Japan itself Sheube has given 7 per cent. as the average death-rate, a figure which closely agrees with the average case death-rate for the disease in Indian prisons.†

THE PLAGUE IN PORTUGAL.

The best account we have hitherto seen of the Plague in Oporto comes from the pages of the *Nineteenth Century* (November). The author is Mr. A. Shadwell, but there is nothing to show that he is a medical man, or identical with a medical man of the same name, who is described in Churchill's Directory as "late Cholera Superintendent, Metropolitan Asylum's Board." Be this as it may, his account is an interesting one, and shows clearly why Oporto was attacked. With the exception of a few cases in one village,

12 miles from Oporto, the disease appears not to have spread, but continues to flourish in Oporto to about the same extent as it does in Calcutta. The latest figures to hand in the *Lancet* give 29 fresh cases with 8 deaths in week ending 4th November, or a total of 209 cases with 72 deaths. The importance of the Portugal outbreak is that it marks a great stride westward of the disease, which is assuming, as it always has assumed, the characters of a pandemic disease. Moreover, there is now little doubt, but that plague has broken out in more than one town in Brazil. In this case the disease has pretty well gone round the world from China to Brazil. The steps have been China, India, Persia, Astrachan, Mauritius, East Africa, Egypt, Portugal, and finally Brazil. The Oporto outbreak shows that Europe is not impregnable to attack, as some had become to assume; but a further investigation of the circumstances of this outbreak show clearly that the conditions necessary for outbreak or for spread are identical in Europe and Asia. Why was Portugal attacked? History shows that Portugal was no more liable to attacks in ancient days than any other part of Europe. Two hundred years have elapsed since the last outbreak in that country. Before going further we may state, that the story of infection having been conveyed from India is a myth. No ship has reached Oporto direct from an infected port for many months, and the cargo variously named as rice, maize, hemp, must have lain for three months in London before being re-shipped. The rat theory is still more untenable, Mr. Shadwell points out, as it is particularly difficult for them to get ashore at Oporto, where there are no docks or quays. The only possible clue is that the disease *may* have been brought from Goa by Portuguese soldiers returning home. Of this, however, there is not a particle of evidence so far produced.

When, however, we learn what sort of a town Oporto is, it becomes clear why the plague should fasten on to it. Mr. Shadwell, indeed, inclines to the belief that it is indigenous there and not imported. The town contains some extremely insanitary slums, where the density of population is about 400 per acre. It was in this strictly limited overcrowded quarter that the disease first appeared. The death-rate of Oporto is very high; very few towns in Europe have as high a death-rate, *viz.*, 30 per mille. Tuberculosis is extremely common. The whole city as regards sanitation is primitive; it is a survival of the middle ages, and it still revels in a condition of primitive filth. The whole town is full of cess-pits without drains, and with a very inferior water-supply. "In fact, it combines every sanitary defect that public neglect can inflict upon a place." "The slum area is wholly oriental in character," a network of tortuous narrow passages. The description given of the sights met

* See Buchanan's "Jail Hygiene," p. 31, &c., for Bengal, and *I. M. G.*, May 1896. For N.-W. P. see Giles' Calculations in Administration Report on Jails for 1897.

† Out of 49,723 cases of dysentery in 3 years in the jails of India, the death-rate was only 6 per cent. —ED., *I. M. G.*

with in the affected area are only to be equalled in the famous report on the filth of Calcutta in 1897.

The disease probably began in June 1899, was suspected in July, and officially declared on 8th August. The first cases were supposed to be among men connected with the shipping. The measures taken to combat the disease looked well on paper, but have been very ineffective. The attempt to surround the town by a military cordon was wholly useless, and lead to harm, by paralysing industries and increasing poverty, and has been gradually relaxed. The internal measures, though better in intention than the cordon, have been no better in fact. The gross ignorance of the people, few of whom can read or write, led to the systematic suppression of cases, consequently the admirable hospital was usually nearly empty. If people refused to allow the sick to be removed, the house was officially closed, and the mischievous principle of the cordon introduced to keep the inmates within the infected building. Mr. Shadwell says nine men were sealed up in one room, where a boy had died of plague, no attempt was made to provide temporary refuges for the inhabitants of a house while it was being disinfected; hence the elaborate disinfecting station with complete appliances was practically useless.

The monthly distribution of the disease has been as follows:—June 17, July 10, August 36, September 57, October (up to 14th) 40. "There is no evidence," writes Mr. Shadwell, "that rats have been an important factor in spreading infection." Men have suffered somewhat more than the women. Buboes have been present in 69 cases out of 76. The classification has been as follows:—Pesticæmic, 15 (all fatal); pneumonic, 3; (2 fatal), haemorrhagic, 3 (all fatal); simple bubonic, 55 (11 fatal). Carbuncles were noted in 3 cases and petechiae in 2. The following gives the relative frequency of buboes:—Inguinal, 22; crural, 22; axillary, 19; maxillary, 12; femoral 6; cervical, 3. The type of the disease so far has been benign. Several medical men have been inoculated with a preparation called "Pasteur serum" of unknown composition.

The above resumé of the first modern European outbreak is interesting, and shows that matters are not very different in Portugal and India.

FAMINE DISEASES.

We have several "famine diseases" in India; but among them we have not pellagra which, though an abiding disease in Italy, has within the past year spread abnormally in the Madras Province, especially in hilly districts. This is ascribed to the failure of the chestnut crop, the staple food of the peasantry; consequently they have been compelled to eat maize, generally unsound—a few months of this food has increased enormously the number of pellagra patients.

The early symptoms are of a digestive type—constipation, diarrhoea, thirst, pains in abdomen, &c.; then follows the characteristic erythema on exposed parts of the body which varies from a slight erythema to an ichyotic state. The mental symptoms are the most important; 10 per cent. of pellagrous patient drift to the lunatic asylums, melancholia and delusions being the most common symptoms. The disease is common in Egypt, as was pointed out in 1898 by Dr. F. M. Sandwith at the British Medical Association meeting. In Egypt two kinds of *Dhurra* are eaten (1) sorghum vulgare or guinea grass, much used in India as a food and as a cattle fodder; (2) the *Zea mays*, or Indian corn (*Makai*). It is the latter only which causes pellagra in Italy and Egypt, and is one of the most universally grown of cereals. In India we know the bad effects of its use when coarsely ground or when weevil eaten, but this is only due to its mechanical irritative action on the intestine. It is diseased maize which causes pellagra. The exact cause of the disease is not known, though Albutt (Vol. II, p. 801) states that it is the fungus *Reticularia ustilago*; he gives no authority, however, for this statement. The disease resembles ergotism and lathyrism; the latter is common enough in India in famine times. Another *par excellence* famine disease in India and elsewhere is "relapsing fever." The returns of the numerous special plague hospitals in Bombay have shown regular admissions for this disease for many months past.

THE INTERNATIONAL CONFERENCE ON VENEREAL DISEASES.

It is not likely that any persons (except the promoters) expected much of value from the late conference at Brussels on the prevention of venereal disease. It formed in fact merely a battleground for two well-opposed parties to fight their battles over again. We extract the following figures to illustrate the relative prevalence of these diseases in the armies of Europe. The figure given below for India is incorrect; it should be 486 for 1897, and 363 for 1898 (according to a House of Commons return.) According to *Sem. Med.*, September 30, Great Britain heads the list, with 194·6 per 1,000 in England, and 522·3 in India (1897); Italy, 90 per 1,000; the Netherlands, 100 per 1,000 in 1896, and 44·7 in 1897, including 6·5 as the proportion of syphilis; Russia, 36·1 per 1,000, including 12 per 1,000 cases of syphilis (1895); France, 51·6 per 1,000, including 8·9 syphilis in 1895, gradually decreasing to 37·5, including 7·8 per 1,000 syphilis in 1895; Germany, 29·9 per 1,000 in 1894, 25·5 in 1895-96. The peculiar benignity of syphilitic infection in China was mentioned by Blane of Shanghai: "by the end of six months it is apparently all finished." The only severe cases he encounters are those contracted in Europe or America.

THE CALCUTTA HEALTH OFFICER'S REPORT.

THIS report is dated 30th June 1899, but we have only recently received it. A report on the health of Calcutta without an account of the plague seems strange; but Dr. Neild Cook explains that the control of plague measures was in the hands of another officer who submitted a separate report (Major C. R. M. Green, I.M.S., F.R.C.S.). The Calcutta birth-rate is very low, only 13·9 mille, but this is explained by the comparatively small number of women and the floating nature of the population. The death-rate is given at 29·8, the lowest since 1893, the mean decennial death-rate being 32·6. The year was a healthy one, due to the falling off in the number of deaths from cholera, small-pox and fevers. The couple of hundred deaths from plague did not materially influence the rate. The infantile mortality is in Calcutta appallingly high, 368 per mille for 1898, with a five years' mean of 437. Dr. Cook writes:—“The infantile mortality of Calcutta must remain high, until the town is opened out and a higher standard of personal hygiene, including midwifery practice, is attained. It is further conducted to by the women in many cases working on a poor diet up to the time of confinement.” The mortality is further explained lower down in this report, where Dr. Cook shows the enormous extent to which milk is adulterated in Calcutta. Milk is adulterated with from 10 to 75 per cent. of water, 30 per cent. the average.

“It would be interesting to know,” writes Dr. Cook, “how many infant lives this simple-minded felon (the milkman) accounts for on the average in the year.”

The mortality from fevers was lower than usual. Dr. Cook is taking measures, in consultation with Major Roland Ross, to apply the mosquito theory to Calcutta malaria. It will be interesting to see the results, but till the question of re-infection or relapse is settled, it will be difficult to judge. Personally, we think, that a large amount of fever in natives of India is due to relapses; possibly if those who suffered from malarial fever took quinine regularly for two or three weeks after an attack, relapses would be few. But how few do so? There were 142 cases of small-pox during the year in Calcutta, 85 of which were fatal. The incidence was 27 per cent. vaccinated (in childhood), 2·8 per cent. inoculated, and 61 per cent. unprotected. The mortality of the vaccinated cases was 44·9 per cent.; 100· among the inoculated, and 63· per cent. among the unprotected. Vaccination was much hindered during part of the year, owing to the plague inoculation scare. In Calcutta, on the average, about 1,000 deaths a year are registered from phthisis; about 800 cases of asthma; 700 cases of tetanus, and 1,440 cases of “remittent fever.” How many fevers are embraced in this term remittent, it is impossible to

say; only eight deaths in 1897 and in 1898 are registered from enteric fever! The vaccine lymph used in Calcutta is received from the Government animal vaccine depot. The “rate of success per cent. in *ascertained cases*” is given at 99·2; 99·2 and 100 per cent. for calf, lanolin and humanised lymph respectively. This being so, we can only interpret “ascertained cases” to mean that the failures were hid away. Dr. Cook has proposed an admirable scheme for the improvement of the Calcutta vaccination department.

The Municipal laboratory did a large amount of work during the year in the bacteriological examination of cases of plague, enteric, &c., as well as numerous examinations of drinking water and analyses of food-stuff and adulterations. Dr. Cook concludes his interesting report by stating that “nothing approaching an average standard of sanitation can be attained without, to a considerable extent, demolishing and reconstructing the town.” The proposal for the Central Railway station, if carried out, would be the first step in this direction.

MECHANICAL PUNKHAS.

COLONEL T. H. HENDLEY, I.M.S., C.I.E., and Mr. Banks-Gwyther (the architect) inspected recently a new form of mechanical punkha, which it is proposed to introduce into the new General Hospital, Calcutta. This system of punkhas is worked by Lambert's patent mechanical method by a small oil engine. The system is now working satisfactorily, we understand, in the Office of the Comptroller-General, Calcutta.

Reviews.

The Practice of Medicine.—By the late M. CHARTERIS, M.D. 8th Edition. Edited by F. J. CHARTERIS, M.B. London: J. & A. CHURCHILL, 1899.

THE fact that this well-known volume has reached the 8th edition is enough to place it beyond the reach of criticism. The present edition, edited by the son of the late Dr. M. Charteris, is thoroughly up-to-date. Many articles have been re-written, and description of a few new diseases have been added. Three plates of micro-organisms have been added. We have read through the chapters on tropical disease and find them complete and thoroughly up-to-date; for instance, the mosquito-theory of malaria is explained, Haffkine's inoculation against cholera and plague is advocated, &c.

From the students' point of view a very useful therapeutical index is given and a very complete appendix on prescribing, and dosage according to the new British Pharmacopœia. A useful and accurate glossary of medical terms

is added, which would be particularly valuable for men of the hospital assistant class, for whom no better practice of medicine could be recommended.

**The Agricultural Ledger, No. 5, 1899.—
HYOCYAMUS MUTICUS (Indian Henbane).**

THIS number of the Ledger contains an account of the use of Indian henbane as an intoxicant in Sind and in Egypt. *H. muticus* is a plant common in Sind and from Kabul westward to Egypt. Its effects have been popularly known to be intoxicant, but it has been often confused with Indian hemp. Specimens were sent to the Imperial Institute, London, and Professor W. R. Dunston's report is now published. It appears that this plant will probably become of considerable commercial value as it contains the valuable alkaloid hyocyamine to the extent of about one per cent. and in a practically pure state. The medicinal effects are much the same as those of ordinary henbane; in large doses it is a powerful excitant, leading to mania-like paroxysms. It is probable that *H. muticus* will prove an important source of the alkaloid, since hyocyamine can be isolated from it with far less trouble than from ordinary henbane (*H. niger*), which also contains hyocine and often atropine. This find is confirmed by a German chemist from an analysis of specimens of the plant sent to Berlin from Egypt. It is much used by the Biluchis as an intoxicant, who dry the leaves and smoke it like *ganja*. We are glad to see from another ledger (No. 6) that a great demand has sprung up for these useful pamphlets, the planting, and mercantile public have indentured for special issues to a large extent.

Enlargement of the Prostate—Its treatment and radical cure.—By C. MANSELL MOULLEN, M.D. (OXON), F.R.C.S. Publisher: H. K. LEWIS.

THE subject of this work is such an important one that we welcome this second edition as evidence of the steady advance of surgery in the treatment of a very distressing form of disease. The "further improvements" foretold by the author, in the preface of the first edition, have been made in discarding operations which experience has shown to be of doubtful utility.

The keynote to a correct understanding of the origin of the condition dealt with is undoubtedly a clear appreciation of the functions and development of the prostate. It is a purely sexual gland in origin and function. In its normal condition it plays no part mechanically in the functions of the bladder. When diseased, however, owing to its altered physical characters, it may act mechanically as a hindrance to the due performance of urination and thus induce a series of disastrous events.

In considering the anatomy and physiology of the gland, stress is laid on the fact that the prostatic urethra is really a part of the bladder. The sphincter vesicae is at the apex of the pros-

tate and not at the base of the bladder. A physiological dilatation of the prostatic urethra is one of the early stages of normal micturition. It must occur before the urine can enter the bulb. Anything altering or hindering this dilatation will cause the development of symptoms of prostatic trouble. The vesical aspect of the prostatic urethra may be partially, or wholly, occluded by an overhanging growth, or its wall may be rendered rigid by an encircling or protruding mass of neoplasm. So long as the prostatic canal is not interfered with by neoplasm, little or no inconvenience results. It is well known, as the author states, that many are the subjects of prostatic enlargement without being aware of the fact, owing to the prostatic urethra not being implicated.

Pathologically the author considers that enlargement is due to a distinct neoplasm, adenomatous in nature, associated with much general fibrosis and chronic arteritis. Ziegler considers that the arteritis is the primary cause of the condition. It is important to remember that these growths, varying as they do in site and size, never invade the gland capsule. They extend down on to the triangular ligament, but exert their previous effects upwards on the base of the bladder.

The various theories of the causation of the disease: Senility, myomatous change, atheromatous degeneration, compensatory hypertrophy are discussed and dismissed as unsatisfactory. Urinary troubles assail only a few of those who have prostatic enlargement, and these by no means the old and infirm. The author appeals to the "sexual theory." The relative frequency with which enlargement occurs, diminishes as the activity of the testicles fails. Orchidectomy is almost always followed by atrophy of the prostate. But what is the nature of the control of the prostate by the testicles, and how that control is exercised are points about which we still need enlightenment. The chapters on the symptoms and effects of prostatic enlargement fully portray the condition of affairs when urinary troubles are coming into prominence. Much is contained in the sentence "Retention must be distinguished from the accumulation of residual urine."

The rigid asepsis of the patient, instruments and surgeon may be considered a little unnecessary by some. Such asepsis cannot be too strongly advocated, and carefully carried out even though five minutes more be added to the agonizing distress of the patient.

The whole subject of palliative treatment is carefully worked out.

As for the radical cure of the disease it is clear that the author, like many others, while not denying the possible value of partial prostatectomy in selected cases, yet is strongly in favour of orchidectomy as the most certain means of cure, and on physiological grounds.

The work will repay the perusal of those who are interested in urinary surgery.

Differential Diagnosis with Clinical Memoranda.—By FRED. J. SMITH, M.D. (Oxon), F.R.C.P., Physician to the London Hospital. London : MACMILLAN & CO., LTD., 1899.

THIS is a very excellent example of a class of book which has become very common of recent years. In old days a student with the aid of his text-book and note-book made up such books for himself, and extremely useful they were. In the present volume (which is the first of a series of medical and surgical manuals being brought out by Macmillan & Co.) the author has admirably succeeded in producing a book which cannot fail to be useful to the student, nor indeed to the practitioner who wishes to refresh his memory.

The first two chapters are introductory and give sound and practical advice in the principles of diagnosis. In the third chapter is an account of the differential diagnosis of the exanthems, then follows diseases of the thoracic organs, the value of physical signs and symptoms in diagnosis, and so on throughout the whole list of diseases. The following may be quoted as an example of the diagnostic tables freely scattered through the book :—

"Gall stones, renal calculus and simple colic may be alike in—

- (1) Sudden onset of pain.
- (2) Sudden cessation of pain.
- (3) Indefinite locality of pain.
- (4) Severity of it.

They more commonly differ in—

Die Hygiene des Gefangniswesens.—Von Dr. A. BAER—*Habch. der Hygiene*, herausgegeben Von Dr. Theodor Weyl. 5 Bd. Abth. II : Jena, Gustav Fischer, 1897.

IN this volume of the monumental work, which is edited by Weyl, Dr. A. Baer, the chief medical officer of the large Plötzensee prison at Berlin, enunciates some opinions, which may interest our readers, many of whom have more or less directly to do with jails.

With regard to *scurvy*, we find that the disease is attributed to a want of fresh vegetables, especially potatoes ; but prominence is given to the statements of Babes and Bornträger that it is due to a bacillus, which has been found by Babes in the gums of scorbutic patients, and which—as Bornträger believes—enters the organism through the intestinal canal.

However this may be, Baer recognises the fact that the better the diet, and the more hygienic the conditions of life in jail, the less scurvy will there be seen amongst the prisoners.

The views of Wright may conveniently be recalled in this connection.

As to *night blindness*—we find, of course, the stock remark regarding the prevalence of this affection in Russia after the long Easter fast; but no mention is made of the connection of night blindness with xerosis conjunctivæ, which is, it appears to us, closer than if these affections merely had a common origin.

Lately we had occasion to see 70 cases of night blindness in an orphanage. In every case there was marked xerosis, and within five weeks

| Gall-stone. | | Renal calculus. | Simple colic. |
|--------------------------|--|--|--|
| (5) Locality ... | Usually in right hypochondrium. | Usually in both loin and groin. | Usually referred to umbilicus or epigastrium. |
| (6) Direction of pain. | Fixed or seems to pass upwards. | Travels down to testicle, which is frequently retracted. | Fixed in umbilicus or travels across abdomen. |
| (7) Character ... | Not intermittent ... | More intermittent than gall-stones ... | Is usually intermittent. |
| (8) Calculus found. | In the faeces if at all ... | In the urine if at all ... | None. |
| (9) Associated symptoms. | Jaundice, dark coloured urine, vomiting may occur from the pain. | Strangury or frequent micturition, possibly bloody urine. | Urination not affected ; vomiting more probable than in the other two. |
| (10) Previous history. | Of jaundice or similar attacks. | Of gravel in urine or other pathological condition of urine. | Of "biliary attacks" or of dropped wrist (lead). |
| (11) Age ... | Middle or later ... | Any age ... | Middle and young most likely. |

This is only one of the shorter examples which might be quoted from this book, and it shows the value and nature of the work.

On the whole, the volume is one which can be strongly recommended. It is well printed and well got up like all Messrs. Macmillan & Co's medical publications.

all recovered under treatment on the lines laid down by Yarr * *pari passu* with the improvement in the state of the conjunctiva, the inability to distinguish objects at night gradually decreased.

* *Jour. of Trop. Med.*, Ap. 1899.

In the *general dropsy*, which occurs in the older jails, with its great anaemia and debility, and the gradual sinking of the patient without any lesion of the heart, liver or kidneys being found at the necropsy, many of our readers will recognize the affection which was so prevalent during the recent famine, and most will agree with Baer's conclusion that the cause is insufficient food.

It is, in the nature of things Indian, not an unusual thing to see cases of *phthisis pulmonalis* in jail; but that these do not differ anatomically or clinically from cases seen amongst the free population is true in India as it is in Europe.

In Baer's view the cause of phthisis lies in infection *plus* predisposition, and to predisposition, hereditary or acquired, he is inclined to give the greater weight.

The prophylaxis of the disease may be effected by "better attention to the wants of the prisoners, a more rational dietary, better ventilation and avoidance of overcrowding."

Prison marasmus.—Under this title are brought symptoms of anaemia, with a tendency to any of the following:—

1. Adenitis cervicalis vel mesenterica.
2. Cachectic oedema.
3. Intestinal inflammatory symptoms.

This marasmus appears to be common in German prisons "of the older type," just as "jail fever" was common in prisons of a type still older.

In regard to *Prison Diet*, Voit's *minima** are given, and the advantages of a mixed, and sometimes changed, diet are noted—the criterion of the suitability of any given diet scale being stated to be its effect on the periodic weighments of the prisoners who are placed upon it.

This dictum of Mittermaier is quoted with approval:—

"Those who so often complain that the prisoners are treated too well, should remember that it is the duty of the State to keep its prisoners in at least so much health and strength as will enable them, on their release, to earn their living honestly like other men."†

The protection of the *water-supply* against possible contamination is insisted upon, as well as the periodic examination, bacteriological and chemical, of the water, in order to ascertain whether the precautions taken remain effective.

We fear that Baer would not approve of the Indian jails' brick berths on which the prisoners sleep; and, indeed, it appears to us that these can hardly afford sufficient rest,

especially in the cold weather, to a prisoner, who, it may be, has spent the day in going round and round an oil mill.

On *punishments* there is a long dissertation. Corporal punishment is denounced as being barbarous and tending to favour the development of disease in the victim. Barbarous it may be; but we much doubt whether, in India at least, it does so much harm to the prisoners who are flogged. We quite agree with Baer in his statement that flogging is unjust, in so far that the amount of punishment inflicted varies with the strength and skill of the operator, and, we would add, with the period which elapses between each stroke; but to the argument, that the punishment affects different men differently, and is therefore unjust, we do not see our way to give weight, for all punishments have this defect. Nor are we inclined to admit that corporal punishment has a bad effect on the onlookers; judging from our own school-days, the effect is not tantalising; but stimulates the onlookers to greater exertion, so that they may not suffer the like.

From Baer's remarks on the treatment of the sick we do not glean much. He insists that the medical officer should always be on his guard against malingering, of which there is apparently no lack in German prisons, any more than in those of any other country.

Apparently 2 per cent. of all German convicts are insane, and great difficulties are encountered in Germany, as in England, by the medical man who is inclined to treat an insane man as a maniac. "Crass ignorance and rooted prejudice are encountered by the patient, and his physician in the majority of prisons," says our author, one is irresistibly reminded of the famous judgment in the MacNaughten case, and doubtless the German lawyers are just as trying, by reason of their ignorance of mental disease, to the physician who at least possesses some knowledge of the subject, as are the lawyers of any other country, save, perhaps, Italy. Not so very long ago an English jurist wrote that, if madmen needed hanging to prevent them from committing murder, then they should be hanged!

In India we have but few criminal lunatics—indeed, very few natives are mentally diseased. Doubtless, this is due to the low mental development of the native; for it is an axiom that the higher the development of the cerebral cortex the more liable is it to become degenerated and to cause mental disorder.*

Of the different systems of confinement in jail, that which finds most favour in our author's eyes is the cellular system. This has, apart from the effect of the first three months, no more evil effect on the health of the convicts than has the system of confinement in common; while the latter, especially in the case of

| | Albumen. | Fat. | Carbohydrates |
|-------------------------|----------|------|---------------|
| | gm. | gm. | gm. |
| * For prisoners on work | ... 118 | 56 | 500 |
| " " not on work ... | 85 | 30 | 200 |

* Archiv. f. Criminalrecht, 3 Bd., 1857.

* Cf. General paralysis of the insane.

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women, is, he says, "only fitted to spread moral contagion and to make the prison a high school of vice and crime."

Of transportation he has little good to say, and indeed the revelations which one has read of the results of the system in New Caledonia do not impress one as being in favour of the system. In Baer's view the case of our Australian colonies stands by itself, for "England is the only state which understands how to make flourishing colonies by means of transported convicts."

Current Literature.

EXTRACTS FROM FOREIGN MEDICAL JOURNALS.

In the September-October number of the *Archiv für Schiff und Tropen-Hygiene*, Dr. F. Plehu gives an account of what he saw during a tour in India and Ceylon, in the cold weather of 1898.

He realises the difficulties with which the Government of India has had to contend in its endeavour to combat plague, and praises the way in which these difficulties have been met.

He admires the hospitals, both plague and general, which he saw; but is surprised that these have not all got water laid on, and that the water-carriage system of removal of excreta is not adopted.

For the management of and teaching in the medical schools, he has a high admiration; but remarks that "Bacteriology is treated in a markedly step-motherly way." Of the training of the hospital assistants he has a high opinion, and recommends that the German East-African Government should, in the event of an epidemic (presumably plague) making its appearance, arrange to engage a large number of Indian trained hospital assistants, for service at quarantine stations and in infectious-disease hospitals.

The excellent results which have followed the establishment of hill-stations in India, Ceylon and Netherlands-India, make him urge the German Government to take up this matter at once.

Incidentally he touches upon blackwater fever and enunciates the opinion that the malarial poison (*plus* quinine) gives rise to the haemoglobinuria by breaking down of the red-blood corpuscles; that this breaking down causes the malarial parasites to disappear from the blood; and thus—the malarial infection being removed—further dosing with quinine gives rise to no haemoglobinuria and, if quinine be withheld, spontaneous recovery occurs in many cases.

The Staining of the Malarial Parasite.—Nocht, of Hamburg, finds that the special staining of the nucleus, produced by methylene-blue is due to a derivative of this dye, which he calls "methylene-blue red."*

This red may be easily prepared from old alkaline solutions of methylene-blue, in which it is always present, by keeping these at 50° to 60° C. for a few days, and then shaking up the solution with chloroform, which becomes dark red. On evaporating this chloroform at the ordinary room temperature, the red is isolated. Used alone it stains the nucleus of young parasites only; but when employed in the presence of eosin and methylene-blue it stains the mature parasites. The *modus operandi* is this: 2 or 3 drops of a 1 per cent. solution of eosin are diluted to 1 or 2 cc. with water. To

this dilute solution is added, drop by drop, a solution containing methylene-blue 1 per cent. and soda 5 per cent. which has been kept at 50° to 60° C. for a few days, and then cooled down—until the eosin solution becomes so dark that the presence of eosin can no longer be detected in it.

On the solution thus obtained, the preparation is floated for 5 to 10 minutes.

[*Centralbl. f. Bakter.*—I. Abth. XXV, Bd. 21—22.]

The Development of the Malarial Parasite.—In the *Zeitschr. f. Hyg. u. Infektionsk.*, Bd. 32, Koch states that, for the present at least, the malarial parasite is to be classed as a special form of protozoon, and not as a coccidium, for reasons which may conveniently be tabulated thus:—

| MALARIAL PARASITES. | COCCIDIA. |
|---|--|
| 1 <i>Habitat</i> —Red-blood corpuscles. | Epithelial cells. |
| 2. <i>Pigment</i> —Yes. | No. |
| 3. <i>Reproduction</i> —(a) By simple division into a few spheres or ovoids. (Endogenous)—(b) No encapsulating membrane. | Division into many crescents. Encapsulating membrane. |

The exogenous stage of the development of malarial parasites is characteristic: they pass out of the red-blood corpuscles and become spherical. Of these spheres there may be distinguished (on staining by Romanowsky's method)—

- (a) the first variety which contain compact masses of chromatin, and whose plasma is but faintly stained;
- (b) the second which are deeply stained; but contain only a little chromatin.

From the spheres of variety (a) the chromatin passed out in filaments—the spermatozooids—which pass into the substance of the spheres of variety (b). These latter, on being impregnated, become worm-like.

Koch further records his opinion that the following belong to the class of true malarial parasites:

- (a) The parasites of tertian and quartan ague.
- (b) The parasites of "tropical fever." *†
- (c) The parasites which are found in monkeys, and which resemble the malarial parasite of man.

(d) *Proteosoma brassii* (Labbé).

(e) *Halteridium Danileffskii* (Labbé).

It is not yet determined to what class belong the parasites found by Kolle in cattle and by Dionisi in bats.

So convinced is Koch of the identity of the various parasites above enumerated with the *plasmodium malariae* that—to use his own words—since his return from the tropics he has devoted himself "to the study of malaria" in animals.

The intermediate host of *proteosoma* he has found to be a gnat—*Culex nemorosus*; that of *Halteridium* is still undiscovered.

Between the young parasites of tertian and quartan ague, he finds no morphological difference from the mature parasites of tropical fever; the distinction can, however, easily be made clinically; for, while the parasites of tertian or quartan ague are found at the beginning of the attack when the temperature is high, the parasites of tropical fever are found in the blood when the temperature has fallen.

He sounds a note of warning against the conclusion being made that all coccidiform parasites and crescent-shaped germs which may be found in mosquitoes are necessarily malarial parasites; for even in *Anopheles maculipennis* he has found—in the poison-gland—crescents

* This is, in Koch's opinion, the same as the summer-autumn fever of the Italian observers.

† All other parasites which are found in man, and resemble the malarial parasites, are lacking in sufficient characteristics.

"which certainly had naught to do with malaria in man, for some of these mosquitoes came from malaria-free localities, while the others—although they came from places where malaria is rife—had been caught in the cold season of the year."*

The Prophylaxis of Malaria.—In the *Deutsche Medicinische Wochenschrift*, No. 37, 1899, Koch publishes the report of the transactions of the German Malaria Commission, in Italy, which he had sent to the Colonial Department of the Imperial Foreign Office.

The Commission worked at Grosseto, the chief town of Maremma, from 25th April to 1st August this year. From July to October Grosseto and its environs are so unhealthy through malaria, that the majority of the inhabitants go away to other provinces, and return only in the end of October.

All cases of malaria run up to 23rd June were cases which had become infected in 1898, and had relapses. Cases of fresh infection only came in after 23rd June. In every case quinine was given in doses of 1 gm. in the day to cases of tertian or quartan ague, and of 2 gms. to cases of tropical fever. In the first class of cases the drug was given during the intermission, in the second class, as soon as the large annular parasites were found in the blood, i.e., when the temperature had fallen.

The quinine was repeated at the next intermission, and this generally had the result of preventing further attacks—in which case the dose was repeated daily for a few days, and then every tenth day during convalescence.

Arsenic and urotropine were tried; but were found to be ineffectual substitutes for quinine.

In one case, which before coming under Koch's treatment had taken small doses of quinine without any effect, a single large dose of the drug was given. In two hours the patient had a rigor and vomited and in another hour passed bloody urine, and became jaundiced.

Although Koch's views on blackwater fever and its causation are well known—from the storm of indignation which they have called forth in Africa—in this case he concludes that the hemoglobinuria was due to idiosyncrasy as the patient had had a similar attack after a dose of quinine at the age of 12.

During the attack there were no parasites in the blood, nor blood corpuscles in the urine, and after the attack the Hb. in the patient's blood was found to be only 50 per cent.

Koch concludes that the prophylactic against malaria is quinine, and states his opinion that every case of malaria should be looked upon as a possible focus of infection, though insect intermediaries, and consequently as a danger to those around him, and should be treated within liberal doses of quinine.

For the diagnosis of malaria, Schüffer, a physician who practises in Sumatra, recommends the following technique:—

The drop of blood is spread out on the cover-glass, and the preparation is then "hardened" by exposure to the air in a not-too-well-lighted room for from 6 to 30 hours (in case of urgency ½ to 1 hour).

It is then carefully placed in a solution of formalin 1 per cent. and glycerine 5 per cent for 5 or 10 minutes; then washed with spring water for from ½ to 1 minute, and stained with Böhmer's Haematoxylin stain—1 to 10 minutes being allowed for the staining, according to the strength of the solution employed. After staining the preparation is again washed; and then after being dried, it is mounted in Canada balsam and examined under the microscope, a low power being first employed. [*Deutsche Archiv f. klin. Medicin* Bd. 64.]

The Treatment of Malaria by Methylene-blue.—Ollwig has treated eight cases of malaria with methylene-blue, and reports two other cases so treated.

In all the blood was examined once or twice daily. As results of the ingestion of the drug there were observed strangury, burning pain in the urethra, and slight incontinence of urine; but only seldom, and in a very slight degree when new methylene-blue was being taken. As a matter of fact all these symptoms were easily controlled by the liberal exhibition of grated nutmeg.

Ollwig recommends that the drug be given during the fever free period, and that any diarrhoea which exists should first be treated, as otherwise the drug will pass through the alimentary canal without being absorbed. The temperature soon falls and later the parasites disappear from the blood. Probably sporulation too is checked; but so far relapses have not been prevented. [*Zeitschr. f. Hyg. u. Infektionsk.*, Bd. 31.]

The Use of Tannoform in Skin Diseases.—Ullmann, of Vienna, has used Merck's Tannoform for the last three years, and finds it to be of much service.

For *syphilis* he combines it with the green iodide as it acts like opium in preventing diarrhoea.

The formula is :

| | |
|------------------------------------|----------------|
| Ix. Hydrarg. Protoiod. | ... gr. viiss. |
| Tannoformi | ... gr. xxx. |
| Ext. et pulv. glycyrrhiz | ... q.s. |
| mift. massa. dividend in pil. xxv. | |
| Sig. 3 to 5 pills daily. | |

For burns he used an emulsion prepared thus—

| | |
|----------------|---|
| R. Tannoformi | gr. lxxv. |
| Paraffini duri | gr. lxxv—(in hot weather gr. cl.) |
| Vaselinii | 5ij gr. xlvi (in hot weather 5ij gr. ccclv.) |

For *hyperidrosis, intertrigo, and eczema* he uses it, mixed with rice-flour or talc, as a dusting powder.

Thus used for *condylomata* and *venereal warts* it has an action which is almost specific. [*Centralbl. f. d. gesammte Teiherapie* Heft v.]

Bael Fruit as a remedy in Dysentery.—Rasch, of Potsdam, from his experience in Siam, where this fruit is called Luk-ma-dum, extols its virtues as an antidyserteric. He recommends that a convenient preparation of the fresh fruit be given to the patient in the afternoon and evening, he having had a purgative in the early morning.

[*Arch. f. Schiffs. u. Tropen Hyg.*, 3 Bd., Heft v.]

W. D. SUTHERLAND, M.D.

MEDICINE.

The Role of Rats in Plague.—This important question is the subject of a recent memorandum by Mr. H. Tripp, Assistant Plague Commissioner, Hyderabad. Mr. Tripp writes:—Every village swarms with rats of the black variety; the houses and hedges are full of them. They subsist on grain and other articles of food, but as they are not dainty feeders, they haunt the latrines and lanes in order to pick up undigested corn and particles of food from excrement. In some of the better classes of village houses, there are latrines, but as a rule the nearest hedge in the day, or the nearest lane at night, serves the people as a substitute. Jowari, the staple food of the people in the Mahratta country, is a very hard grain, which when eaten raw or half roasted, very often passes along the bowels unchanged. When ground in hand-mills and baked into chapatties, the coarse particles of jowari are discharged undigested. Boiling, which softens jowari and other millets, is not the ordinary method of cooking. Baking is on account of its simplicity adopted instead: it is a cruder process, which often leaves the central part of a chapatti half cooked. After being cooked, the chapatti is handled with fingers, to which flour still clings, and is often kept in a dirty cloth. Even with ruminating animals, as cattle, jowari swallowed whole, frequently passes through the entire length

* Koch finds that the malarial parasite requires a relatively high temperature for its development.

of the bowels unaltered. It is by feeding on the residual matter in the excrement of plague infected persons, that rats acquire the disease : they then transmit it to one another. From rats it is conveyed to human beings by articles of food, such as ghee, oil, sugar, jaggery, milk, butter, cards, dried cocoanuts, dates, ground-nuts, etc., all of which are eaten raw by villagers, and by means of stale food, such as chapatties. Corn in grain, as well as in meal, and the various pulses, doubtless become contaminated by the saliva and faeces of rats, but as these are dry stuffs which do not foster the vitality of the plague virus, and as they are ground and cooked before being consumed, they are not likely to propagate the disease.

Everything in fact, which is nibbled or meddled with by rats and then eaten, or after being polluted by them or their excreta, and subsequently eaten by men, may convey plague. The quantity of the virus consumed, and state of the stomach at the time, full or empty, will, as the analogous case of cholera, determine the period of incubation and the severity of the attack.

Vomiting is not a common symptom of plague in man : it is unnecessary therefore to dwell on the point, whether rats may acquire the disease by feeding on the ejected, undigested portions of food or not, beyond admitting the possibility in rare cases of such a source of infection in the rat.

It is possible that water may act as a vehicle of infection as in cholera, a disease with a period of incubation equally short and like plague intrausmissible through the air or by personal contact. In village houses, where the drinking water is kept in open vessels exposed to the incursion of rats, there is a great danger of contamination ; nevertheless, water is not the common medium of infection as it is in cholera. In one respect, these diseases resemble each other and, that is, in the comparative immunity from attack enjoyed by infants fed solely at the breast. When, however, an infant is given a morsel of a *chapattie* to suck, in order to keep it quiet, or fed when old enough, with fragments of food, in addition to being suckled, there is a risk of its getting plague, just as it would be liable to get cholera, if fed on watered milk. There are to my personal knowledge three infants now living, whose mothers have had plague ; two of the women have died, but the third is still alive.

The success which attends the evacuation of a village is rapidly comprehended, if it be remembered that the rats are left behind and soon die out partly from plague and partly from starvation. This view explains the necessity for evacuating a village so completely that not a particle of any food-material is left behind. In correspondence with this obligation is the other equally important one, that camps should be pitched so far from the village as to preclude the possibility of rats migrating to them, and infecting their no less numerous field-congeners, or even human beings.

Rats are occasionally conveyed from houses by accident into camps with household articles or food-stuff.

If rats are, as herein indicated, the greatest and most dangerous factor in plague epidemics, their destruction is not only the best preventive, but the best suppressive measure. Poison, traps, the rearing of cats and dogs, the offer of rewards for the destruction of members of the rat-family are all means which suggest themselves for ridding towns of this pest. By killing the rats off in advance, there is far less likelihood of imported cases of plague giving rise to an indigenous outbreak. Should indigenous plague occur, the destruction of rats should be maintained as a certain means by which the foci of infection can be reduced. If the faeces of plague patients could be invariably destroyed by burning or some other equally potent process, the risk of rats contracting the disease would be reduced to the lowest

possible minimum. The most effective preventive measure, however, would be to impart some disease to rats, which would exterminate them and yet leave man unscathed.

I may add that squirrels are equally capable with rats of acquiring plague, and of transmitting it by the food-stuff, which they contaminate with either their saliva, or excrement, to human beings. It is not unlikely that food is also the medium by which they, in common with rats, propagate the disease amongst themselves.

Cuban Malarial Fever.—At a recent meeting of the Medical Society of the County of New York M. H. Thomson said that from his experience the treatment for Cuban malarial fever which gave by far the best results consisted in the administration of fifteen grains of quinine, fifteen grains of powdered ginger, and half an ounce of paregoric, twice a day—in the forenoon and afternoon. Under this treatment the patient received an equivalent of three grains of opium each day. This plan was tried on forty-seven patients, all of them actively febrile, and eighty-four per cent severely so. Fourteen febrile patients, of whom sixty-five per cent. were severe, were treated with Warburg's tincture alone as a control experiment. In twenty-two, or forty-seven per cent. of the number who took the paregoric, there was a fall of temperature to normal within twenty-four hours, and it did not rise again. The treatment was continued from eleven to fourteen days, and the patients were then discharged. In ten patients, or twenty-one per cent., from thirty-six to forty-eight hours was required to reduce the temperature to normal. In three the treatment failed to control the fever. One of these, however, had a colitis, to which his continued fever seemed to be mainly due. No relapse was recorded in any patient taking the paregoric treatment after the temperature had once been reduced to normal. In five cases, or 10·5 per cent., the paregoric treatment could not be continued because of the nausea excited. They were then given quinine and ginger alone, and they recovered, but relatively slowly. Six out of the forty-seven proved in time to be cases of mixed infection with malaria and typhoid fever. There were only two patients who showed the effect of opium : the remainder not only were not drowsy, but seemed to be aroused from their stupor by the treatment.

Of the fourteen patients treated with Warburg's tincture, in two, or fifteen per cent., the temperature was reduced in twenty-four hours. Both of these were patients who had been recently admitted, and who had been treated with quinine previously. In twelve, or forty-five per cent., the time required to break the fever varied from forty-eight hours to ten days. In seven of the cases the Warburg's tincture failed to control the fever after ten days. All of these patients recovered in about twenty-four hours under the paregoric treatment. Of the remaining thirty-nine out of one hundred, twenty-six were admitted as convalescent, and without any fever. They were all extremely anaemic, and the plasmodium malariae was found in eighty per cent. They were all given the paregoric, quinine, and ginger treatment, with as good general results as in the febrile cases. In the delirious febrile cases the paregoric seemed to act especially well. Both from the blood examinations and from the clinical features, Dr. Thompson said that it was evident that the Cuban malarial parasite belonged to the astivo-autumnal type, and that its cycle of development in the blood is very irregular as to time. This would seem to indicate that the action of quinine is only secured at certain stages of the life history of the parasite, and emphasizes the practical benefit of administering this drug at certain times. In the more or less continuous forms of malarial fever it seemed to lose much of its effect. When, therefore, the physician

has to deal with an infection not having definite remissions, quinine is still valuable if given at proper times, but increasing the dose in these cases seems only to make matters worse.

BACTERIOLOGY AND PATHOLOGY.

Organisms isolated from Cancer; and their Pathogenic Effects upon Animals.—By H. G. Plimmer. (*The Proceedings of the Royal Society, Vol. LXIV, No. 411.*)—During the last six years the author examined 1,278 cancers, and among this number he found nine in which the cell-inclusions, which he, together with Ruffer, Metchnikoff and others, remarked as parasites, were extremely numerous, and in two of them were present in enormous numbers. From the last of these remarkable cases he has succeeded in isolating an organism which is pathogenic in certain animals, and whose virulence he has been able to maintain for some months. The medium in which the organisms were cultivated consisted of an ordinary beef infusion made from cancer, just as an ordinary beef infusion is made, and to which was added 2 per cent. of glucose and 1 per cent. of tartaric acid. Hardly any bacteria will grow on this medium which is a great advantage. It had been used successfully for the culture of the same organisms on two previous occasions, but they had no pathogenic properties. In this last attempt, however, the additional step was taken of replacing the air of the flasks with hydrogen gas and sealing them up, with the result that the virulence was maintained up to the date of writing, namely, four months. In from three to five days a pure culture of the organism was obtained in this way.

The organism appears to be a saccharomyces, and produces a cloudiness in the medium in forty-eight hours, while after six days the growth sinks to the bottom of the flask, leaving the medium clear. When grown on the same medium solidified with agar, the organisms form small white separate colonies, which become yellow after some weeks. Gelatin affords a scanty growth which does not liquify it, while on potatoe it forms a thick white layer in two weeks, changing later to yellow. They will grow aerobically more slowly and soon lose their virulence. They are rounded bodies frequently seen in clumps, and with a deeply staining nucleus, and a well-marked capsule. Their size varies from 0.004 to 0.04 mm., and reproduction appears to be by budding. They correspond morphologically to the bodies found in the original tumours.

Rabbits were inoculated with a culture, both intravenously, intraperitoneally and subcutaneously with negative results, but when it was injected beneath the dura mater in the same animals they were found in large numbers in the nervous system a few days later, and pure cultures were recovered from these and other organs. Rubbed on the cornea a proliferation of the epithelial cells was produced, which were found to contain the organism and presented similar changes to those of cancer inclusion cells. In the guinea-pig intraperitoneal injections resulted in the formation of new growths on the serous membrane, and the organism was cultivated from several of the end-organs including the liver. The growths were epithelial in structure with the organisms in the cells and free in the tissues. These experiments have been repeated by Professor Wright, of Netley, with similar results. Experiments in which the organisms are brought into contact with epithelial surfaces are being proceeded with.

The Parasites of Cancer.—By Dr. William Russell. (*Lancet, April 29th.*)—In this paper an interesting account of the recent work of Sanfelici and Roncali in Italy is given. The former commenced work on the biological characters of blastomycetes and was

struck with their resemblance to Russel's "fuchsin bodies" which are so commonly found in cancers and have for long been considered by their describer and others as organisms of cancer. Sanfelici found that when injected into guinea-pigs they caused a general infection with the formation of tumours containing these parasites and from which they could be cultivated again. In mice and rats similar results were obtained, and in two out of twelve rabbits the parasites were also found. Out of thirty dogs in only two were tumours developed, but the parasites could not be cultivated from them. In cats the inoculation of the blastomycetes gave rise to the formation of Russel's bodies in large numbers, especially in the mesenteric glands, spleen and bone marrow, while they were not found in normal cats. Later he passed the organisms through a series of dogs by inoculating them into the peritoneal cavity, and with the modified organisms thus obtained he was able to produce new epithelial growths with metastases in dogs, which were indistinguishable from cancer in those animals, but he could not then cultivate the organisms from these slowly growing tumours as he had been able to do from the more acute infections, obtained in the smaller animals, and suggests that when the parasites have become so modified as to be able to cause slowly growing tumours producing Russel's bodies, that they are then unable to grow in ordinary culture media. (They have now been successfully cultivated from human cancer by Plimmer as shown in the previous abstract.)

Roncali has done much histological work on the cancer parasites, and has also succeeded in obtaining cultures of the blastomycetes and in producing tumours in guinea-pigs by their inoculation, and hence concludes that they are the cause of cancer.

It will be seen, then, that while Plimmer and Roncali have obtained cultures of blastomycetes from cancerous tumours and reproduced similar tumours by their inoculation into animals, Sanfelici has started with ordinary cultures of these parasites and by means of modifying them by passages through dogs, has then produced cancerous tumours in these animals by inoculation of these low forms of animal life. If these results are confirmed cancer must be recognised as a parasitic disease.

L. ROGERS, M.D., F.R.C.S.

Medical Societies.

SURMA VALLEY MEDICAL SOCIETY.

A MEETING of the above Society was held in Silchar on 28th October.

Dr. CHARTRES shewed stones and bladders of two cases of encysted calculus, one was of special interest in that the stone had ulcerated into the rectum, the patient dying of haemorrhage.

Captain MELL and Dr. JOHNS made remarks on the comparative rarity of encysted stone as compared with stones contained in sacculi of the bladder and the case with which the sound missed them.

Mr. ARTHUR POWELL read notes on hypertrophic cirrhosis of the liver in children of well-to-do natives. He shewed sections of the liver and spleen, pointing out the apparent proliferation of the duets, around which the fibrous tissue was very abundant. A case, the fourth of the family, which was to have been shewn, unfortunately died the day before the meeting.

Attention was drawn to the manner in which the disease ran in families, and that it was distinct from syphilis. Mr. Powell considering the age at which it began, end of first year, absence of any syphilitic symptoms in child or parents and especially that children of the same parents born at an interval of fifteen years were liable to the disease, that the disease was never limited to a portion of the liver, that gummata or lobulation were never

found and that the transverse fissure was never alone affected, the uselessness of mercury and the iodides proved its distinctness from syphilis.

Dr. H. GLOVER was unanimously elected Honorary Secretary.

Correspondence.

THE TEST FOR HÆMOGLOBIN.

SIR,—“R. A. M. C.” in last month’s *Indian Medical Gazette* laments that “guaiacum and ozonic ether are unknown luxuries in station hospitals.”

I presume he wants a test for haemoglobin, if so, he can get guaiacum in any station bazaar.

Quite as good as ozonic ether for this test is a little old turpentine, preferably some which has been exposed to the air for some time.

Two important points,—the tincture of guaiacum must be *fresh*, the turpentine must be *old*.

Yours, &c.

ARTHUR POWELL.

THE FAMOUS MARCHES OF THE GUIDES.

To the Editor of “THE INDIAN MEDICAL GAZETTE.”

SIR,—During a perusal of Lieutenant-Colonel McCartie’s paper on rational dress for the soldier published in the November number of the *Indian Medical Gazette*, I notice that two notable marches, made by the Guides in 1857 and 1897 respectively, are made use of to illustrate the author’s point.

While admitting the desirability of improvement in the dress of the soldier on field service, I should like at once to say that in both the instances referred to the passage beginning “Every one remembers—” and ending “in the rational costume of civilians” is an inaccurate statement of facts, and neither is nor should be generally known or recognized as the truth.

To begin with, as far as the historic march of the Corps to Delhi in 1857 is concerned, there is no authority either in regimental records, nor anywhere else, as far as I can ascertain, for the statement I refute. The following extract from a manuscript History of the “Q. O.” Corps of Guides, compiled by successive Commanding officers, explains what actually did happen on that occasion, and I give it at length.

“The Corps received orders to march to Delhi on the 13th May at 6 P.M. and joined the force before Delhi on the morning of the 9th June; a distance of 580 miles—or 51 regular marches—in 26 days including two days’ halt, and one day spent in burning villages. This rate of marching, of course, could not be performed by the Infantry on foot at that season of the year, so camels were allowed, one to every two men, and thus it was that they were enabled to keep up with the cavalry, and to accomplish 30 or 40 miles a day between sunset and sunrise. Notwithstanding this turning of night into day and vice versa, the number of men that reported sick was extremely small. Each man seemed to vie with the other in bearing up against all privations and fatigue.”

Equally in the second instance, of which I have a personal experience, the march to the Malakand on July 27th, 1897, when 32 miles were traversed in thirteen hours exclusive of halts (between 1.45 A.M. and 6.30 P.M.), it is absolutely incorrect to state that the men had to discard their uniform and march in the rational costume of civilians. On the contrary, every man not only wore his own uniform but carried his rifle and 70 rounds of ammunition.

Whatever other circumstances may have conspired towards a successful issue in these instances, I am afraid that the fact of marching in the rational costume of civilians had nothing to do with it; and it seems to be merely to permit of needless detraction from such merit, as these performances deserve to allow Lieutenant-Colonel McCartie’s description of the way in which things were done to pass uncontradicted.

As a matter of fact then, neither of these marches can be held to strengthen Lieutenant-Colonel McCartie’s argument, and other circumstances altogether than the temporary discarding of an irrational dress and cumbersome impedimenta must be held responsible for the condition of the men who took part in them on their conclusion.

MARDAN,
December 1899.

Yours, etc.,
A. J. MACNAB, F.R.C.S., CAPT., I.M.S.,
Q. O. Corps of Guides.

THE EXTERMINATION OF MALARIA.

To the Editor of “THE INDIAN MEDICAL GAZETTE.”

SIR,—I am quite in accord with Captain James’s view, expressed in the December number of the *Indian Medical Gazette*, that the extermination of the anophelis mosquito will not prove to be quite such a simple affair as Major Ross had led us to expect. It seems probable that in different localities the larvae are differently distributed. For instance, Major Ross appears to have found them only in puddles of various sorts to which fish have no access while Captain James mentions in addition paddy fields and pools in open land. The latter states that the presence of minnow and frogs is not necessarily fatal to the development of the larvae, and also that rocky pools are sterile.

My experience is confined to Sivasamudram Island, near the falls of the Kaveri and to Madras city. At Sivasamudram the Kaveri flows in a wide, shallow, rocky bed round the islands. When the river falls it leaves innumerable tiny pools of water on the rocks, and nearly all of these contained anophelis larvae and some of them culex. These pools are rapidly dried up by the sun, but reformed by every shower of rain. On the island there are four wells, in two of which I found anophelis larvae. This place is so malarious that only a few natives now live there, and these few evacuate the village during the cold months which appear to be the most unhealthy. It would be well nigh impossible to exterminate the mosquito from the extensive area formed by this river bed. However careful one may be, in a spot where anophelis is so abundant, it is almost impracticable to avoid being bitten unawares, and ten days after leaving this place I hadague on three successive days, followed after an interval of twelve days by a further attack on two successive days.

In Madras city I have found anophelis larvae most widely distributed (1) in unused wells (even in the most thickly populated parts) which contain enough garbage and vegetable matter for the larva to feed on; (2) in puddles in open land; (3) in three swamps, formed in two cases by the effluent from sewage farms and in the third, which covers an area of two or three acres, b, the discharge of a drain carrying sewage and storm water over low ground with a lay subsoil. In paddy fields I have so far found nothing, and tanks which contain fish are also free. Anophelis appears to prefer fairly clear water, and when found in swamps, the larva and pupa are generally thickly covered with vorticella. Culex, on the other hand, will flourish in the richness and crudeness of sewage. It would seem then quite possible, if there is no other factor than the mosquito to be considered in connection with the prevalence of malaria, an assumption which is still involved in doubt, to put an end to malaria in a thickly inhabited city which has a minimum of open spaces, for in such a case old unused wells would probably be found to be the chief if not the only breeding places; and these could easily be either filled up, kerosined or regularly cleaned out. The mosquito larva like everything else must eat to live, and cannot therefore exist in pure water which contains no vegetable matter. As for potassium permanganate, before mosquito larvae are much injured by it, all the oxidisable matter in the water must be disposed of even then the larvae will live for days in a pink solution, and appear to succumb more from starvation than from poisoning. We shall never be able to destroy all the mosquitos in a swamp with a few ounces of potassium permanganate as some one in America stated he had done. In a city like Madras which covers an area of 27 square miles, the business of extermination promises to be a serious and difficult one, lasting many years and involving the expenditure of many rupees.

Yours, &c.,

J. W. CORNWALL, M.A., M.B., F.L.S.,
Capt., I.M.S., Health Officer, Madras.

SCLEROTISING OR CICATRISING GRANULOMA.

To the Editors of “INDIAN MEDICAL GAZETTE.”

SIRS,—In a sub-leader in your December issue you call the disease “cicatrising granuloma (to give it its most correct title). In a previous number, one of you, Colonel Maitland, argues in favour of this name.

In your April issue, I, in agreement with Dr. Daniels, argue against adopting the adjective “ulcerating,” which Galloway Colecott Fox, Manson and others had adopted.

I said, ulceration is not specific to any one of the infective granulomata, “but occurs in most, if not all,” of them, “tuberculosis, syphilis, mycetoma, actinomycosis, glands and (?) yaws; yet we do not think it necessary to use the adjective, ulcerative to indicate this possibility.”

I pointed out that ulceration was only an accident. I have seen at least three cases in which there was absolutely none. Dr. Daniels has sent me two beautiful photographs of the disease and in neither is there a trace of ulceration.

"Cicatrising," according to the dictionaries, means "the producing of a cicatrix or scar," "the scarring of a wound or ulcer." Therefore, to be "cicatrising," the granuloma must first be "ulcerating," and any objection to the latter term applies still more strongly to the former.

In all cases there is a pre-existing granuloma or plasmoma, and in all the plasma cells, at least in part, disappear by an indurating growth of fibrous tissue, a true sclerotising process.

There is not much in a name, but yet a name may enshrine a pathological heresy.

I trust, before this disease receives an official baptism, the name "Sclerotising Granuloma," for which Dr. Daniels and I will stand sponsors, will have its merits carefully weighed.

I am, etc.,
ARTHUR POWELL.

Service Notes.

SURGEON-GENERAL W. NASIR, Principal Medical Officer at Netley, has retired from the service at the age of 60 years. He entered the Army Medical Service in 1863. He served in the Afghan War of 1878-80, and in the Egyptian Expedition of 1882. He is succeeded by Surgeon-General G. J. H. Evatt, recently Principal Medical Officer of Hongkong.

THE Secretary of State for War has approved of allotments of pay and separation allowances being continued in all cases where the soldier is a prisoner of war in South Africa.

A PERSON signing himself "One in the Know" writes a far from well-considered or temporate letter to our contemporary, the *United Service Gazette* (November 18th, 1899) *apropos* of our article on Professor Ogston's address in our October number. He begins by stating that he has "20 years' experience of India and the working of the I.M.S." He writes (1) the *Indian Medical Gazette* is edited by men of the I.M.S. and, therefore, its effusions must be taken with "mounds" (*sic*) of salt. (2) The civil side of the I.M.S. instead of providing the very best reserve provides *in practice* the "very worst." Why? (a) Because they have no sense of discipline and no training in it (!); (b) the I.M.S. is not loyal to its "colleagues of the R.A.M.C.;" (c) the I.M.S. comes forward with reluctance to military service, and when they come, do their best to get quickly back to their snug and easy billets; (d) officers of the I.M.S. are constantly writing letters to the I.M.S. Secretary at headquarters severely depreciating "the work being done in military employ" (*sic*); (e) the I.M.S. are not employed at "first line" at military work, i.e., in the field hospitals, and "military" medical officers do not require them except to take their place at the base or in Cantonments; (f) of the 547 major operations (referred to as done by one officer in a year) "of what use are 406 operations for cataract or 63 for stone in military surgery. Are not many of the said operations performed by the native assistants?"

[No; these figures refer only to operations done by each individual officer.—ED., I.M.G.]

"My own opinion and that of the medical officers with local experience, is that civilian medical men employed in England and sent at once to India would be far better than the present arrangement of the division of the I.M.S. into Civil and Military sections, for they would be always willing (not unwilling), and the hospital assistants could well help the new comers with the language!" The fact is that I.M.S. officers in civil employ lack experience of British troops, their habits, customs, chief ailments, &c., [!] The I.M.S. obstruct (*sic*) every reform that tends to make the British soldier effective (!), and it is well known that an officer of that service, now in a position of authority, has been busy opposing measures which have been pressed for the improvement of our troops (!), &c., &c.

[We need not continue to quote this peculiar production, which is not even expressed in good grammatical English. As for the statements and insinuations contained in it they are beneath contempt.—ED., I.M.G.]

IT is understood that an oil painting of Lieutenant-Colonel R. L. Dutt, I.M.S., who has just retired, will be subscribed for, to be placed in the Hooghly Town Hall.

THE Medical College, Calcutta, is soon to lose two of the oldest members of its staff. Colonel R. C. Saunders, M.D., I.M.S., has been Professor of Ophthalmic Surgery since 1886. He entered the service in April 1869. He is an M.D. of Durham and

F.R.C.S. of Edinburgh. He will be succeeded by Lieutenant-Colonel F. F. Perry, F.R.C.S., I.M.S., who is Professor of Surgery at the Lahore Medical School. Colonel C. H. Jouber, F.R.C.S., I.M.S., who on promotion succeeds Colonel J. H. Newman as Principal Medical Officer, Lahore District, has been Professor of Midwifery in Calcutta since 1890. He will be succeeded by Major F. S. Peck, I.M.S., who is at present on furlough and working with Professor Cullingsworth at St. Thomas' Hospital,

MAJOR A. H. NOTT, I.M.S., on return from furlough goes back to Hazaribagh as Civil Surgeon. Major F. P. Maynard, I.M.S., then goes to Ranchi.

LIEUTENANT-COLONEL T. GRAINGER, I.M.S., Civil Surgeon of Durbunga, goes on furlough shortly for two years.

CAPTAIN J. T. CALVERT, I.M.S., whose application for an extension of furlough has been refused, returns to Bengal in March.

MAJOR D. G. CRAWFORD, I.M.S., has gone on furlough, and is succeeded at Alipur by Major H. Browne, I.M.S.

ENTERIC fever is a very prevalent disease in Natal. It was epidemic at Utrecht during the Zulu War of 1879 and at Newcastle and Ladysmith during the former Boer War.

Another disease which we are sure soon to hear more of is endemic haematuria, which is very prevalent all over Natal.

A LARGE number of civilian medical men have been attached to the various field and general hospitals in connection with the forces in South Africa. We learn from a correspondent at the Cape that numerous British medical men are offering their services for duty during the campaign.

PROFESSOR A. E. WRIGHT, of Netley, has designed a new microscope called the "Army Bacteriological Microscope" (J. Swift & Son). It possesses Professor Wright's special diaphragm and focusing adjustment. The price is £17 10s.

SENN'S dictum about wounds on the field of battle is "no touching of the wounds is to be done by those who first pick up the wounded." The stretcher-bearers should only apply the "first field dressing" to close the wound.

DR. JAMES ALLEN, of Pietermaritzburg, came to the conclusion that typhoid fever depended chiefly upon infected cattle. He described a specific enteritis in calves of a very contagious nature, and held that the excreta of animals effected on gaining access into the human body gave rise to typhoid fever. This was, he held, the chief cause of enteric fever among our troops in the Zulu War.

BETWEEN 20,000 and 30,000 doses of Professor Wright's typhoid vaccine have been sent to South Africa for use of the troops. The war will thus give a great opportunity for testing the value of this prophylactic, as a large number of the soldiers have been inoculated.

A PORTABLE acetylene field search-light, invented by Lieutenant von Kries, of the German Army, is described in the *Militär-Wochenblatt*. It is intended to be used at night in searching for the wounded on the battle-field. The acetylene developer, which a man can easily carry on his back, is constructed to contain rather more than two pounds of calcium carbide. This is sufficient to produce a supply of gas capable of maintaining a light of from fifty to sixty candles for eight hours. A special arrangement of two concave parabolic mirrors increases the power of the light by reflection and concentration to about one hundred candles. The light, with the reflector, is placed on the top of an upright rod, which forms a pivot upon which the light can be turned in any required direction. The effective radius is about one hundred yards. A metal tube connects the light with the developer, which is automatic, and, it is said, not dangerous.

MILITARY officers in civil employ will continue to wear uniform under the existing orders (Mili. Dept., 2501 E, dated 16th Nov. 1887). But when a military officer is appointed substantively to any civil office for which uniform is prescribed, he shall wear the uniform of that office. (Govt. of India, 1st Dec. 1899).

IN the severe fighting at the Modder River on 11th December, Lieutenant Douglas, R.A.M.C., was wounded and Major Burchall, R.A.M.C., became a prisoner of war. Major C. H. Burchall is a graduate of Trinity College, Dublin.

JAN. 1900.]

GAZETTE NOTIFICATIONS.

LIEUTENANT-COLONEL W. FLOOD MURRAY, I.M.S., who has just retired, has been for many years a Civil Surgeon in Bengal. He entered the service in October 1869.

SEVERAL years ago Surgeon-General Crawford fixed the minimum of the Army Medical Staff at 890, at the same time noting that the figure was "perilously low." He also recommended that the strength be raised to 1,000. But instead of this taking place the establishment has been kept at only 833, with what result?—that dozens of civilian practitioners have to be entertained, not only for the regiments and depôts at home, but for the field hospitals and even for the Bearer Companies. These men, it is needless to say, get a far higher rate of pay than an equal number of young officers of R.A.M.C. would get. After the late mobilization on the 1st November 1899, there were only 140 officers left for all sorts of duties. How the 5th, 6th, 7th and 8th divisions (of the second Army Corps) are to be officered with medical men, it is not easy to see. A couple of dozen youngsters at Netley won't go very far. As the Crimean War resulted in Netley so the present war may result in putting the medical staff on its proper footing.

LIEUTENANT-COLONEL B. M. BLENNERHASSETT, R.A.M.C., is appointed to officiate as an Administrative Medical Officer with the temporary rank of Colonel, *vice* Colonel J. H. Hughes, R.A.M.C., deceased.

LIEUTENANT-COLONEL EDWARD FAWCETT, F.R.C.S.I., I.M.S., is permitted to retire from the service. He entered the service 1st October 1869, and has been on furlough (*m.c.*) since May 1898.

COLONEL J. C. G. CARMICHAEL, M.D., I.M.S., Principal Medical Officer, Presidency District, has taken furlough pending retirement and Colonel J. Young, M.B., I.M.S., becomes Principal Medical Officer. Colonel Young has been P.M.O. of the Malakand Force. He entered the service in March 1872. Colonel Carmichael, I.M.S., has seen much service. He was in the Waziri affair of 1881, in Egypt in 1882 (action of Tel-el-Kebir), in Burma 1886-7 (mentioned in despatches), on N.W. Frontier 1897-8, as P.M.O., Malakand, and P.M.O., Buner Field Force (mentioned in despatches).

THE term of service of Colonel J. H. Newman, I.M.S., Principal Medical Officers, Lahore, will expire in March next.

CAPTAIN A. E. PINCH, I.M.S., has been placed on temporary half-pay. He only left Netley in July 1896, and had to go home on medical certificate some months ago.

CAPTAIN M. LOUIS HUGHES,* R.A.M.C., whose death is reported in the desperate battle at the Tugela River, entered the Army Medical Service in 1889. He was recently Sanitary Officer at Aldershot. He was well known for his work on Malta Fever, and was the author of the well-known monograph on Malta or "Undulant Fever," published by Messrs. Macmillan & Co.

MAJOR J. H. BRANNIGAN, R.A.M.C., who was wounded at the Tugela Battle, is an I.R.C.P., Edinburgh, and was educated at Queen's College, Belfast.

THE last number of the *Practitioner* suggests that a few Consulting Physicians should be sent out to South Africa as well as more Consulting Surgeons. They would act as Sanitary Commissioners—"the service in such a capacity of a man of independent position combining medical knowledge with official experience in sanitary administration would be invaluable. His presence with the army would at once be a support to the medical officers and a check on Commanders who may think the care of the health of their soldiers a 'fad.'"

TERRIBLE as the losses have been from wounds, there can be no doubt but that dysentery and enteric fever will account for a great many more.

FOLLOWING the example of Sandhurst, the R.A.M.C. probationers this winter at Netley are having their course cut short, and at a special examination held in December 14 officers of the R.A.M.C. were passed and granted commissions.

WE are glad to see that Colonel Kenneth McLeod, M.D., I.M.S., of Netley, is to be President of the Tropical Section of the R.M.A. meeting to be held at Ipswich in July next. Two other I.M.S. men are the Vice-Presidents, *viz.*, Surgeon-Lieutenant-

* The telegrams only say "Captain Hughes, R.A.M.C.;" there is also another officer in the R.A.M.C. of the same rank and name.—ED., I.M.G.

Colonel Oswald Baker, late I.M.S., now on the staff of the London Tropical Medical School, and Major Ronald Ross, I.M.S.

A NEW section appears in the B.M.A. programme, viz., "Navy, Army and Ambulance" as it is quaintly termed. Professor Ogston is President and Surgeon-General H. Skey Muir, A.M.S., is Vice-President. Mr. Treves, now in South Africa, will deliver the annual address in Surgery.

ON the 1st December there were only 103 medical officers of the R.A.M.C. on the active list left at home for duty. It is said that over 1,000 qualified medical men have offered themselves for active service.

CAPTAIN SAMUEL GUISE MOORE, R.A.M.C., who was wounded at the second battle at the Modder River, is a St. Thomas' man, and M.R.'S. of 1888.

COLONEL W. P. WARBURTON, I.M.S., lately retired, has been appointed to the post of Superintendent of the Royal Infirmary, Edinburgh.

MAJOR BURCHAEL, R.A.M.C., is, according to Reuter, to be treated as a combatant officer by the Boers because he wore a revolver when captured while attending the wounded at Magersfontein.

WE understand that Dr. Manson will probably in the immediate future bring out a large treatise on Diseases of Tropical Climates. Such a work would undoubtedly be the standard book on this subject for many years to come.

Gazette Notifications.

INDIA.

The services of Captain W. D. HAYWORD, M.B., I.M.S., and of Captain H. W. R. COCHRANE, I.M.S., F.R.C.S., are placed temporarily at disposal of Bengal.

The services of Captain T. H. FOULKES, I.M.S., and of Captain C. B. HARRISON, M.B., I.M.S., are placed temporarily at disposal of Madras.

Major J. T. W. LESLIE, I.M.S., is granted furlough out of India for 2 years, from 5th January, 1900.

Lieutenant-Colonel W. FLOOD MURRAY, M.B., is permitted to retire from the service from 18th December, 1899.

The services of Major A. R. W. SEDGEFIELD, I.M.S., are replaced at the disposal of the Government of India in the Home Department.

The services of Major C. C. MANIFOLD, I.M.S., are placed at the disposal of the Government of India in the Home Department, with effect from 15th January, 1900.

N.-W. P. AND OUDH.

Lieutenant-Colonel G. HALL, F.R.C.S., I.M.S., Inspector-General of Prisons, N.W.P., is granted 2 years' furlough, 1st January 1900. Major C. MACTAGGART, " Prison, Allahabad, to officiate as Inspector.

Major ERNEST HUDSON, I.M.S., F.R.C.S., to be Superintendent Central Prison, Agra.

Major W. H. E. WOODWRIGHT, I.M.S., F.R.C.S.I., to be Civil Surgeon of Bahraich.

Captain C. MILNE, I.M.S., to be Civil Surgeon of Jaunpur.

BOMBAY.

Captain A. HOOTON, I.M.S., and Lieutenant-Colonel A. W. F. STREET, D.S.O., I.M.S., respectively, delivered over and received charge of the duties of Deputy Sanitary Commissioner, C.R. District.

Lieutenant-Colonel F. C. BARKE, M.D., F.R.C.S.I., has been allowed an extension of leave (*m.c.*) for 3 months.

Captain S. E. PRALL, I.M.S., to be Civil Surgeon, Nasik.

Captain F. A. SMITH, I.M.S., to be Civil Surgeon, Sukkur.

Captain A. J. HEALTH, I.M.S., 6 months extension of leave (*m.c.*).

Captain R. W. C. KEAYS, to plague duty, Sholapur.

Lieutenant-Colonel D. C. DAVIDSON, I.M.S., Superintendent of Mahableshwar, is appointed to be a magistrate of the first class in that district.

MADRAS.

The services of Captain C. M. MATHEW, I.M.S., are placed temporarily at the disposal of the Government of Madras.

BENGAL.

Major D. G. CRAWFORD, I.M.S., Civil Surgeon of 24 Pergunnas, is granted 15 months' furlough.

Lieutenant-Colonel T. GRAINGER, I.M.S., is granted 2 years' furlough.

Captain H. M. EARLE, I.M.S., is appointed Civil Surgeon of Arrah, until further orders.

Captain H. J. WALTON, I.M.S., is appointed to act as Resident Medical Officer, Eden Hospital, Calcutta, *vice* Captain H. M. Earle, I.M.S.

THERAPEUTIC NOTES.

We have received specimens of one of Messrs. Burroughs, Wellcome & Co.'s latest preparations, viz., *Guaiacum Resin* in 5 grs. tabloids. The properties of guaiacum are well known, and the tabloids are an extremely elegant way of prescribing the drug in cases of rheumatism, rheumatic gout, &c.

The Carlsbad (Sprudel) salts, recommended by Major L. Tarleton Young, I.M.S., in his book reviewed in our columns last month, is imported by Mr. Stanley Oakes, 13, Government Place, Calcutta, from whom the pure natural salt can be obtained in any quantity by those desirous of trying the treatment.

The Treatment of Chronic Diarrhoea.—Any remarks on treatments from the pen of Dr. Barnoy Yeo are worth reading, therefore we quote from a lecture of his (*Lancet*, July 22nd, 1898), on the treatment of a case of chronic diarrhoea which, had it occurred in the tropics, would probably have been called "Sprue." The patient when first seen was a living skeleton, unable to take any food without provoking diarrhoea, had had diarrhoea for six months; five or six stools daily, soft, semi-fluid, always light-coloured except when taking bismuth, stools passed without pain, loss of appetite, bad taste, "sick headaches;" had had typhoid as a boy, and twenty years ago in Manilla had had dysentery for two months. Yeo first prescribed a mixture of bismuth carb. gr. 20, magnesii carb. gr. 20, with tincture of chloroform and mucilage to the ounce of water. This dose thrice daily before food. (Bismuth, says Yeo, should not be prescribed, as is often done, after food). Also enemas of catechu and tincture of opium. Under this simple treatment the diarrhoea disappeared but returned nine months after. By this time the patient's health was seriously impaired, he had lost much flesh, still there was no pain, but the motions were semi-fluid and white. Yeo now tried antiseptic pills (calomel $\frac{1}{4}$ gr., thymol gr. 1 and rhubarb gr. $\frac{1}{2}$). This did no good; next was tried oxide zinc gr. 2 with pulv. catechu comp. gr. 10. Still the diarrhoea continued and emaciation increased. Tongue became red and raw, covered with patches of aphthous ulceration. He was put to bed and milk diet again tried three pints a day, increased soon to four pints, with a teaspoonful of pancreatic emulsion. He also got a drug, coto bark, which Yeo had often found useful in irritable intestinal conditions. Coto bark tincture m. x with cardamoms and spirits of chloroform, &c., proved useful, and the diarrhoea ceased within 14 days. As milk was well borne it was increased to five pints, and two ounces of cream daily added. Then came more cream, pancreatic emulsion, two ounces of stale bread, meat juice (Wyclif's) and three eggs beaten up in boiling water. On this treatment weight increased from 7st. 10lbs. to 8st. 9lbs. In a week or so a little fish (sole) was added to the dietary, bread and butter and some brandy. Later on a little fat bacon grilled and beef or mutton with occasionally potatoes and a few peas. Finally, he was able to eat a fairly liberal diet and to return to work; but he still stuck to the pancreatic emulsion—the patient said the diarrhoea would return if he left it off. The case is interesting as it shows what skilled treatment and nursing can do to a man in a state of perilous anæmia. It was lucky that milk agreed with him, otherwise resource would have had to be made to raw meat juice, lately strongly advocated (*Practitioner*) by Cantlie.

Treatment of Obesity.—The following methods are summarised in Sajous's "Cyclopaedia of Medicine": For the treatment of obesity, diet: five meals during the day. For breakfast, a raw egg at eight o'clock, two-thirds of an ounce of lean meat or lean fish, the whole eaten cold and dry (this condition is emphasised, that the patient must eat his meal cold; cold meat may be consumed in greater quantity than hot meat without causing increase of weight), one-third of an ounce of bread, one cup of hot tea without sugar. At ten o'clock, two raw eggs, one-sixth of an ounce of bread; five ounces of wine and water, or tea without sugar, allowed. At noon, cold lean meat ad libitum, but no bread; a little watrcress or salad, salted and flavoured with lemon juice; of raw fruit, three to five ounces for dessert; and for drink may be taken, with this meal, one or two tumblersful of water, or water simply reddened with a little wine. One-fourth of an hour after dinner, a cup of weak tea, not sweetened; and at four P.M., a cup of weak tea not sweetened, and nothing else allowed. At seven P.M. the same repast may be taken as in the morning at eight o'clock, and a little more lean fish or meat may be added, which the patient may eat warm; the whole quantity must not exceed three and one-third ounces.

Exercise in the open air is insisted on; this may consist of a walk of half or three-quarters of an hour after each meal—that is, five times a day. The time spent in this exercise should be gradually increased from half an hour to three-quarters of an hour of brisk walking after each meal, and all the influence of the physician should be exerted to enforce this regulation. If the patient be a woman, a carriage ride with a walk in the country may be the utmost that can be exacted.

Hydrotherapy followed by frictions—in a word, everything which stimulates the functions of the skin, vapour-baths, massage, etc., may be enjoined.

Sleep during the daytime should be absolutely interdicted. The patient should go to bed at eleven o'clock P.M., and rise at

six A.M., during the summer, and seven A.M., during the winter—not more than seven hours of sleep for an adult, and eight for a child.

It is possible to obtain sufficiently good effects from regimen without having recourse to any kind of medicine.—A. ROBIN (*Bull. Gén. de Thér.*, October, 1897, *Audited Practitioner*.)

Combined Malarial and Typhoid Infection.—We have recently referred to this subject. Herewith is another American view of the question:—

Dr. WM. WATT KERR presented a paper on this subject. He said that the abolition of the term "typhomalarial fever" had been strongly advised by many writers, owing to its use as applied indiscriminately to many conditions of continued fever. While many of these cases are but forms of a typical enteric or estivo-autumnal fever, we must acknowledge that double infection by the malarial and the typhoid germs occurs. Only within the last few years have we been able to demonstrate the malarial plasmodium, and the typhoid condition through the Widal; hence it is only within the last few years that we have been able to demonstrate the presence of this double infection. Thus far nearly fifty cases have been reported; the present paper adds five to the list. Twelve cases of typhoid were seen in Dr Kerr's wards of the City and County Hospital, between June 24 and August 30 of the present year. In the blood of four of these the plasmodia were discovered. In all four the plasmodia were intercellular, two being of the hyaline and two of the pigmented variety. He reported the cases in detail. They are of interest, for they show that malarial attacks are not always a fresh outbreak of an old infection, during typhoid convalescence. The two diseases may appear simultaneously and coexist actively. The temperature in all of these cases ran an irregular course. In the last there was no fever for three days, then sudden rise and fall, malarial in nature. Most cases of typhoid in California show irregular temperature-charts. Very seldom does a temperature chart at all resemble those seen in European cities. Careful examination of the blood will show a fairly common condition of double infection, which may be called "typhomalarial fever."—*Journal of Amer. Med. Assoc.*, Dec. 2nd, 1899.

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs. Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs. Thacker, Spink & Co., Calcutta.

Annual Subscription to the *Indian Medical Gazette* Rs. 12, including postage.

BOOKS, REPORTS, &c., RECEIVED.

1. A Manual of Surgical Treatment. By W. Watson Choyne and F. F. Burghard. Longmans & Co.
2. The Practice of Medicine, Charteris, 8th ed., J. and A. Churchill.
3. Mental Affections. Macmillan & Co.
4. Vol. XIII, Weekly. 1898.
5. Surgery of Fractures. E. Pratt. H. K. Lewis
6. A Laboratory Manual of Physiological Chemistry. By E. W. Rockwood. The F. A. Davis Co., 1899.
7. A Manual of Surgery. By G. Stonham. Vols. I. & II. Macmillan & Co.
8. A Manual of Modern Gastric Methods. By A. L. Gillespie. Oliver and Boyd, 1899.
9. The Thagi and Dakaiti Report, 1898.
10. The Health Officer's Report, Calcutta.

COMMUNICATIONS RECEIVED FROM:—

- Col. T. H. Hendley, C.I.E., I.M.S., Calcutta; Lt.-col. E. Lawrie, I.M.S., Hyderabad; Major F. P. Maynard, I.M.S., Hazaribagh; Capt. J. T. Calvert, I.M.S., London; Lieut. O. G. Lalor, Limerick; Capt. R. Maddox, I.M.S., Charing; Major D. G. Crawford, I.M.S., Alipur; Capt. A. Macnab, I.M.S., Mardan; Asst. Surgeon Dutta, Hooghly; Capt. W. D. Sutherland, I.M.S., Sagar, C.P.; Capt. Fernside, I.M.S., Rajahmundry; Major J. H. Tull-Walsh, Berhampur; Major Marks, I.M.S., Etawah; Major J. Sayth, Mysore; Dr. P. J. Freyer, London; Lt.-col. Sturmer, I.M.S., Madras; Lt.-col. Eyre, I.M.S., Madras; Capt. L. Rogers, I.M.S., Mukteswar; Major J. W. T. Leslie, Simla; Captain R. Bird, I.M.S., Calcutta; Mr. A. Powell, Cachar; Dr. Neve, Kashmir; Capt. H. M. Earle, Arrah.

Original Articles.

THE DESTRUCTION OF MOSQUITOS.

BY MATHEW D. O'CONNELL, M.D.,

L.T.-COL., R.A.M.C.,

Principal Medical Officer, Peshawar District.

SCIENCE now assures us that malarial fevers are due to a parasite in the blood which is conveyed from man to man, and the fevers thus propagated by a certain species of mosquito.

If this be true the extermination of this species of mosquito becomes a matter of vital importance to the human race. Many methods of accomplishing this have been suggested which are, however, all directed against the larvæ and not against the fully developed insect. The larvæ of mosquitos are found on the surface of pools of water, and hence it is suggested that various larvicides, such as carbolic acid, potassium permanganate, perchloride of mercury, kerosine oil and others, should be spread on the surface of these pools with the object of destroying the larvæ, and thus exterminating mosquitos and eradicating malarial fevers. Of these, kerosine oil is declared to be the best, and the West African Correspondent of the *British Medical Journal* relates how it has been demonstrated by experiment that one drachm of kerosine oil poured on a puddle of water one square yard in area, destroyed in six hours all the larvæ contained therein.

This method, if it could be carried out thoroughly, would, of course, exterminate mosquitos. But there are not a few obvious and considerable difficulties. In the first place, there is the difficulty of recognising the puddles on which anopheles deposits its eggs. This in itself is apparently no easy matter. For the correspondent above mentioned writes in the journal of 30th September 1899: "It is easy with a little practice to detect anopheles puddles, almost at sight, from a distance, but it is not so easy to say exactly how we recognize them." But if experts, who can, apparently by a sort of inspiration, easily recognize these puddles at sight from a distance, cannot say exactly how they recognize them, the difficulty, for those who are not experts, becomes insuperable; and of course we cannot expect to have experts scattered throughout the malarial zone ready to point out anopheles puddles that should be covered with kerosine oil. Indeed it is not the first time that a malarial expert experienced an inability to say exactly how he can do what he declares he finds no difficulty in doing in actual practice. For instance, Man-

naberg, when striving to make clear how he distinguished a non-pigmented, intra-corporeal malarial parasite from a simple vacuole in a red corpuscle, experienced the same difficulty. He wrote "the differences are difficult to describe shortly in words, but by a little experience, it is possible to decide, in the majority of cases, one way or the other."

Still admitting the difficulty of saying how anopheles puddles are to be recognized, it is obvious until experts overcome this difficulty that anopheles cannot be exterminated by kerosine oil. But even when experts overcome this difficulty and tell us exactly how to recognize anopheles puddles, the difficulties remaining are not slight. For, the number of square yards of these puddles in the rains in India, to say nothing of the remainder of the malarial zone, must be considerable; and apparently unless all these puddles are covered simultaneously with kerosine oil, complete success of this method cannot be expected.

But until destruction of the larvæ of anopheles by means of kerosine oil becomes possible why not make use of those natural enemies of the mosquito, minnows and lizards? Plasmodists (a convenient, if erroneous name) tell us that minnows eat the larvæ of anopheles, and the female insect knows this so well that when she is about to deposit her eggs, she avoids those puddles which contain her enemy, the minnow. This same wonderful instinct will in time, no doubt, teach her to avoid those puddles on which it is possible for her other enemy, man, to pour kerosine oil.

Still if the minnows eat the larvæ of anopheles, why not breed minnows in millions and stock all puddles, known or suspected to be the breeding place of mosquitos, with them? This indeed, if practicable, would effectually destroy all larvæ.

Again, lizards, which are found in large numbers in and around our dwelling houses in India, devour the fully developed mosquito. Every one knows the pretty little lizard which lays in wait for the mosquito on the walls of our rooms, and may be seen any night during the hot season. His appetite for mosquitos is simply enormous. He usually takes up a position in the shadow close to a wall lamp, where he remains motionless until some hapless mosquitos (let us hope gorged with malarial parasites), attracted by the flame, alights on the wall in its vicinity. Then, with the rapidity of lightning, he pounces on and devours the mosquito.

We have all seen him at, what seems to be, the only work for which he was created, little dreaming that, all the time, he is defending us from our arch-enemy, the malarial parasite, by destroying mosquitos.

Why not take a hint from nature then and breed lizards in millions for the destruction of

the fully-developed mosquito, and in this manner assist in the eradication of malaria.

These methods may be considered unpractical, but they are at least as practical as the proposal to pour kerosine oil on all the anopheles puddles of water in the malarial zone. Indeed the latter proposal is rejected by Koch and others who are turning once again to the old methods of drainage and the use of quinine for the eradication of malaria. But both of these methods were known and to a certain extent successfully acted on before Laveran discovered in palustral blood, the bodies which are said to be malarial parasites. So that after thirty years of patient, painstaking investigation, and of marvellous inductive reasoning, so called science can teach us no better methods of eradicating malarial fevers than were known and practised before the malarial parasite was discovered.

The proposal to shut up in mosquito nets, while the fever lasts, all those who suffer from malarial fevers with the view to prevent their becoming a source of infection to others, cannot, even when supported by the great authority of Koch, be regarded seriously. For in the first place, I find in the report of the Sanitary Commissioner with the Government of India for 1897 that the number of admissions for ague amongst British and Native troops, and civil prisoners in jails, is 117,214 out of a strength of 316,720 in that year. What then must be the number of admissions for ague (to say nothing of other malarial fevers) amongst the teeming millions of India and of the whole malarial zone? Can it be seriously proposed to shut them all up in mosquito nets while they have fever? And even if it is, apparently this would not be sufficient, for those who make this proposal explain the recurrence of paroxysms of ague in persons many years after infection, and in countries where mosquitos are unknown, by asserting that the parasite may lie dormant in the deeper organs for years without producing any febrile symptoms. So that this method of eradicating malaria, to be practical, means shutting up all infected persons for years, if not for life, in mosquito curtains.

But in discussing the best methods of exterminating mosquitos and so disposing of the malarial parasite are we not proceeding a little too rapidly, "by leaps and bounds" as is so frequently claimed? Are the bodies which Laveran discovered in palustral blood, and which all can see, really parasites? Has it been ascertained beyond question that mosquitos convey these bodies (and malarial fever) from man to man? Is it certain that *protozoa* in birds is the equivalent of malaria in man? Despite the eminence of those who unhesitatingly reply in the affirmative, and who admit no reason for doubt, these questions have not yet been satisfactorily answered, that is, these cannot yet be regarded as established facts.

TWO CASES OF COMPOUND DEPRESSED FRACTURE OF THE SKULL, WITH PUNCTURE OF MEMBRANES BY SPICULA OF BONE.

TREPHINING AND ELEVATION OF DEPRESSED AREA: RECOVERY.

By A. J. MACNAB, F.R.C.S.,

CAPTAIN, I.M.S.,

"Q. O." Corps of Guides.

THE two following cases having recently occurred in rapid succession of one and other, and having, as they will be seen to have, points of common interest, they are thought to be of sufficient importance to merit description together.

In that first to be described, the patient was a boy of ten who some four days after the receipt of his injury was brought in from a neighbouring village, some eight or ten miles off, for treatment. His case is of especial interest on account of its being one of an injury to the Rolandic area, which, though resulting primarily in complete hemiplegia, was all but totally recovered from in spite of considerable damage to the brain in the region specified, and even loss of brain matter in that portion of the motor area which is responsible for the movements of the wrist, fingers and thumb.

On July 8th, 1899, Fazal Din, a boy, aged ten, was brought to the dispensary from a neighbouring village. Four days before, while he was bathing in a stream that ran between high banks, another boy had thrown a large stone at him from above, which striking him on the head had felled him senseless there and then.

On recovering from a short period of unconsciousness, he found that his left arm and leg were powerless. He was carried home and lay there for three days without treatment, and on the 4th he came in to me as I have said.

On admission he was perfectly conscious and sensible; there were no symptoms of compression and his pupils were normal, but there was complete motor paralysis of the left, upper and lower extremities, together with complete anaesthesia of the arm, and partial of the leg. On the right side of the head, four and a half inches above the right ear, and one and a half inches from the vertex, was a gaping wound some three and a half inches in length, its long axis parallel to the sagittal suture; at the bottom of the wound, and corresponding with the greater part of its length, could be seen a gutter-shaped depressed fracture of the skull, crossing the line of the fissure of Rolando a little above its middle. Happening to be present at the moment when the boy was brought into hospital, I proceeded, without any further delay, to operate.

After shaving the head, the wound itself, as well as the whole scalp, was purified ; the scalp wound was bisected by an incision some three and a half inches long (the neighbourhood of the fracture was thus better exposed than by making a flap) and the soft parts and pericranium having been turned back and all haemorrhage arrested, the fracture was fully exposed. This was now seen to be an extensive gutter-shaped depression occupying the centre of the wound and about one and a quarter inches in length. There was no gap between the depressed fragments, which were firmly impacted into one another, and elevation was naturally impossible without trephining ; accordingly, a trephine was applied to the skull at a point corresponding to the middle of the lower edge of the depressed area, more than half of the circumference of the crown of the instrument being over sound bone. On the removal of the disc of bone, a clot of considerable extent, though of no great thickness (there were never, it will be remembered, any symptoms typical of compression), was found. Through the trephine hole such depressed portions of bone as could be were elevated, while others which firmly resisted elevation were removed by the gouge-forceps ; a somewhat free use of this instrument was required to expose more fully the damaged area of the cortex.

It was then possible (*a*) to remove the greater part of the clot already spoken of as lying about the neighbourhood of the trephine-hole ; (*b*) to see that the depressed area of the cortex comprised, as was expected, the portions of the motor area which concern the movements of the opposite lower and upper limbs in their whole extent (that part of the area around the upper and of the fissure of Rolando being more superficially affected than that which lay in the centre of the line of fracture as was natural) ; (*c*) that the part of the motor area which had suffered most was that responsible for the movements of the forearm, fingers and wrist, and (*d*) that in the line of the centre of the fracture, and just behind that of the fissure of Rolando, a small wedge-shaped spiculum of bone had been driven through the dura mater and was sticking into the brain, and that through the rent in the dura mater brain matter was escaping.

After removal of this and all other loose pieces of bone and débris, the softened brain matter presenting through the rent in the dura mater was washed away by a stream from the irrigator, and the whole exposed surface carefully cleansed with a 1 in 1,000 perchloride of mercury solution. The lower half of my incision in the scalp was then sutured, but the upper half and the whole length of the original wound was left open. Two strips of cyanide gauze, folded narrow, were used for drainage, and placed at right-angles to one another, the end of one strip terminating in the immediate vicinity of the tear in the dura mater ; a large antiseptic

dressing was applied, and the boy put back to bed. Though the operation had lasted two hours (for all shaving of the scalp and preliminary cleansing had been done under an anaesthetic), he showed no unfavourable signs, took some nourishment that evening, was not sick and slept well. Next morning his temperature was normal (it was 99.2° on admission), the wound was dressed and was looking very well, and he was bright and cheerful and complained of no pain. He was subsequently dressed daily, but dates are now given only on which important changes either in the wound or in the patient's condition were noticed. The operation took place on July 8th.

July 10th.—The first signs of a hernia cerebri are to-day noticed, and bulging through the rent in the membranes is a small protrusion of brain matter of the size of a pea. The wound is looking otherwise excellently well, drainage is perfect, and the temperature is normal. There is as yet no power of movement in the left arm and leg, nor any return of sensation.

July 12th.—The hernia cerebri has increased, and is now of the size of a walnut. The general condition of the wound is otherwise very satisfactory. The temperature reached 99.2° this evening. The first signs of return of sensation and movement are to-day noticed ; power of sensation in the lower extremity has almost completely returned, and the leg could be raised from the bed ; there is no change in the condition of the upper extremity.

July 14th.—The wound continues to do well, the hernia cerebri has become stationary, and is of the size of a walnut. The power of movement of the lower extremity is improving rapidly, and he can now stand up and bear his weight upon it ; the power of sensation has completely returned. The condition of the arm remains still unchanged.

July 16th.—To-day, eight days after the operation, imperfect movements of flexion and extension, addition and abduction of the upper arm are possible, also movements of flexion and extension of the forearm. Return of sensation in the upper extremity is also to-day noticed for the first time, and though not perfect, reaches from the shoulder to the wrist on all surfaces. The wrist and hand are still quite paralysed, and hang helpless, reminding one of a case of lead-palsy.

July 20th.—Movements of the upper extremity already described have shown gradual improvement since the 16th, and to-day are nearly complete though weak. Movements of the wrist now begin to be possible, but not yet of the fingers. The lower extremity has much improved in power, but the boy is still in bed. The wound continues to progress most favourably ; the hernia cerebri has united to the edges of the wound in its neighbourhood, and, as was expected, is becoming diminished in size, and will

doubtless be gradually obliterated during the process of cicatrisation. The power of sensation and movement in the upper extremity has very rapidly improved, but the fingers are still devoid of sensation and movement.

July 22nd.—To-day, fourteen days after the operation, the boy walked to the operating-table from his bed to be dressed.

From this date to the end of the month there was gradual increase in the strength and power of all movements; the fingers, however, still remained paralysed. The wound continued to heal well by granulation, and, except for a slight temporary interference with drainage which necessitated the insertion of a tube at the lower angle of the vertical incision made at the time of operation and which caused the only real rise of temperature, there was in the course of the case, the boy continued to do well. The lower extremity may be considered to be normal as regards power of movement and sensation from July 14th.

August 2nd.—All movements of the upper extremity as far as the fingers are stronger, and to-day for the first time he begins to feel in his fingers, but he cannot yet move them. The wound is healing rapidly, and the hernia cerebri has become very much smaller.

August 4th.—The hernia cerebri is scarcely recognizable.

August 8th.—The wound has entirely healed. To-day for the first time movements of the fingers begin to be possible; they are feeble and imperfectly co-ordinated but undoubtedly present.

August 14th.—Movements of the fingers have so far improved in power and control as to enable the boy to-day to pick up a stethoscope from the ground. Except for those of the wrist and fingers, all movements of the upper limb are now complete, though the limb is weaker than its fellow. The wrist can be flexed and extended and is perfectly under control, but extension is weaker than flexion.

During the remainder of the month massage was employed twice daily, movements of the wrist and fingers slowly improved, and all other movements of the upper limb became correspondingly stronger. This brings us to the date when the boy is about to be discharged from hospital, and his general condition is as follows:—He has put on flesh, is perfectly free of headache, loss of memory, or any sign of mental deficiency. There are no signs of any degeneration, nor has there ever been any epileptic attack. He can walk perfectly well, and the left lower extremity is as strong as the right, and as perfect in power of movement and sensation. The left upper limb is a little weaker than the right, though not very far behind it as far as the wrist. At the wrist movements are undoubtedly still

impaired, but they are improving in power. Movements of the fingers are so far under control as to permit of his picking up a pin with some difficulty, of closing the fist, and of flexing and extending the fingers; but he cannot oppose the thumb to any finger but the index, and can but imperfectly abduct or adduct the fingers. There is some slight wasting of the thenar and hypothenar eminences, especially of the latter, and of the interosseous spaces; this wasting is, however, not extending, but, on the contrary, seems to be slowly improving. Sensation is perfect everywhere. After having given him a thin steel plate curved to fit the skull, and large enough to protect the defect in it, which he wears sewn between the layers of the skull cap usually worn by people in this part of the world he was discharged on September 16th.

The interest of the case, apart from that of being able to watch the striking improvement effected by the operation, and its generally satisfactory progress, lies in the fact that the portion of the cortex implicated happened to be the greater part of the motor area, and that the rapidity and perfection of recovery depended naturally upon the degree of damage sustained by different portions of this area. Thus the centres for movement of the lower limb merely suffered a very temporary paralysis and began to recover as soon as ever the depressed bone was elevated, while that part of the 'area' responsible for the movements of the wrist and fingers was the last to recover, because it had been penetrated by a spicule of bone, and there was here actual loss of brain substance, though even these movements were, at the time of the boy's discharge from hospital, far more perfect in power and co-ordination than might have been expected.

The second case, which is more or less of a parallel, is that of an old man of about sixty who, some fifteen days before his admission to hospital, had sustained a compound depressed fracture of the skull in the upper portion of the right frontal region. When first seen he was walking about among other out-patients at the Mardan Dispensary with a vertical contused wound of the scalp some two and a half inches above the right eye, perfectly regardless of his serious condition. Pus was oozing from the wound, and depressed bone could be felt in the greater part of its extent. He was apparently very little incommoded, complained of little or no pain, was perfectly conscious and in full possession of his faculties. His pupils were equal and normal, and his temperature 100°F. As, however, pus could be seen welling up from beneath the skull, and there was no time to be lost, he was at once put under an anaesthetic, and an incision made through the scalp across the line of the wound, (this, as in the former case, being the best way of exposing the depressed area) when an ex-

tensive fracture running well back into the parietal bone, and at an angle of 45° with the sagittal suture, was found. The anterior quarter of the line of fracture was depressed and gutter-shaped, while immediately behind the depression a large quadrilateral piece of bone was found to be loose, and from underneath it pus could be seen oozing.

Before trephining, cautious examination with the probe revealed the fact that at the lower and anterior edge of the depression the dura mater had been penetrated, and the trephine was, therefore, so applied, as to remove the disc of bone from the neighbourhood of the rent in the membranes. This was done in the usual way, the greater segment of the circle implicating sound bone to the lower aspect of the line of fracture. After removal of the circle of bone the depressed area was elevated, the tear in the dura mater carefully investigated, and the loose quadrilateral piece of the skull, before alluded to, which was entirely separated on both surfaces from its periosteum (and must evidently necrose) and from beneath which pus was seen to be oozing, was removed entire.

Though no brain matter was escaping, nor any pus from within the membranes, the probe passed freely into the brain. It seemed probable however, that after so long an interval, there was a very fair prospect that the dural injury was shut off from the general subdural and subarachnoid spaces, and it was hoped that, provided satisfactory drainage was arranged for, the rent would rapidly close; and special attention was paid to this matter. After free irrigation and cleansing of the now extensive area of the membranes, exposed by the removal of the loose quadrilateral piece of the skull (already spoken of as lying close to the site from which the circle of bone had been cut by the trephine), as well as by that of several smaller pieces from the line of fracture, which had obviously been already deprived of all hope of recovery, the lower half of the incision made in the soft parts was then sutured with silkworms gut, the edges of the original wound were refreshed and brought together by stitches of the same material, the tail of a narrow gauze drain was led into the hole in the dura mater, and a small tube so adjusted as to permit of the best general drainage of the wound, and a cyanide gauze dressing applied. The injury to the brain implicated the first and second right frontal convolutions.

The recovery of the patient has been rendered difficult by a severe intercurrent attack of diarrhoea, from which he has now fortunately recovered. The slight headache complained of for the first day or two after operation has passed off; he suffers in no way from loss of memory, affection of speech, or from any other serious consequence of his injury, and, though he is still at the date of writing, October 29th, under treat-

ment, he bids fair, indeed, is practically certain, to be up and about very shortly.

It will be seen that the nature of the fracture, the fact that some time elapsed before treatment was sought (a much greater interval in this second case than in the first, the more serious of the two), the injury to the membranes and the compulsory removal of a considerable area of the skull are common to both cases. In the first case, however, apart from the symptoms peculiar to an injury in the Rolandic area, there was, as will be remembered, injury to and loss of an appreciable amount of brain matter, and the formation of a hernia cerebri, which latter was in itself a matter for congratulation and led to no difficulties in treatment. While in the second case, as distinguished from the first, although there was absolutely no symptom to indicate the severity of the injury, the presence of pent up pus beneath the cranium led to the necessity of removing the large necrosing portion of bone loosened from all its connections and denuded both of its paricranium and dura mater that has been already spoken of.

I am indebted to Mr. E. Phillips, Assistant-Surgeon at Abbottabad, for careful notes of the case first recorded and to him and to Assistant-Surgeon Firoz Din Mohroo of the Mardan Dispensary for their care in the after-treatment of both cases.

REPORT ON MALARIA FOR THE MONTH OF NOVEMBER 1899.

BY E. LAWRIE, M.B.,

L.T.-COL., I.M.S.

The Report is furnished as usual by Dr. N. Evans. The photographs and drawings by Mr. Ram Chunder.

PART I—CLINICAL.

EIGHTY-TWO cases of malarial fever were treated in the Residency Hospital during the month of November, three only as in-patients. All the cases have been tabulated with drawings, to show the kind of Laveran body seen in the blood in each case. This will enable others to make the diagnosis of the type of fever in our cases for themselves, and to criticise or check ours. In twenty-one, or 25·6%, of the cases nothing abnormal was found in the blood. Quotidian was as usual the most common type of fever, but eleven of the quotidian cases had the simple tertian body in the blood; one had the quartan; and in sixteen hyaline bodies of the malignant tertian type were found. Thus, out of fifty-five cases of quotidian fever, only five were correctly diagnosed by means of the microscope alone. In seven the diagnosis was doubtful, and in eleven the examination of the blood gave negative results. The so-called aestivo-autumnal types of the Laveran body were most frequently met with. In nine cres-

cents only were found, and in these cases no diagnosis of the type of the fever could be made with the microscope. In two cases, in which hyaline bodies were found, the diagnosis was doubtful; they have therefore been classed in the table with the crescent cases as aestivo-autumnal.

It will be observed that in all but one of the cases in which the fever had lasted for one day only, no Laveran bodies were found in the blood. Some of these cases were possibly not malarious fever, but it has been noted that in undoubted malarious cases, the Laveran body is rarely met with in the blood before the second or third day. It can, therefore, hardly be regarded as the unquestioned cause of the fever, since it is never seen in the blood before the attack. During the month under report four cases have been under observation in which the so-called quartan parasite was found in the blood. This is the rarest type of the Laveran body, at all events, in this part of India. In two of the cases the fever was quartan, in one irregular, and in the fourth quotidian. Two tertian cases had large and small intra-corpusecular Laveran bodies—the full grown and the young “parasites”—and were diagnosed from the blood examination to be examples of double simple tertian fever, and should have had fever every day. But the fever was actually of the true tertian type, coming on every alternate day instead of daily, and the microscope diagnosis was consequently incorrect. In case No. 65 the intermediate stage between the hyaline body and the crescent was seen. This case was diagnosed as malignant quotidian, and the patient had been suffering from fever for eight days. His temperature was taken hourly in the rectum and varied between 103 and 105°6, and while he was in the hospital never went below 100. The fever was accordingly not quotidian but continuous. On the morning he was admitted the blood was examined, and many pale hyaline bodies were seen, some of them having a few coarse granules. In some of the red cells two or three small hyaline bodies were seen. Another examination of the blood was made the same afternoon. Hyaline bodies of the pale and the ring-shaped varieties were found, also those with the granules in them. Besides these there were some red cells containing large pale bodies almost crescentic in shape, and with the black granules more or less clumped in the centre. The clear outline and dark coarse granules gave them the appearance of proteosoma. An indistinct rosette inside the red cell was also seen. Drawings of these bodies are given in the tabulated list of cases. Next morning the blood was again examined, and hyaline bodies in large numbers were seen, a few with black granules in the centre, and one well formed crescent. No more observations were possible after this, as the patient absconded. In

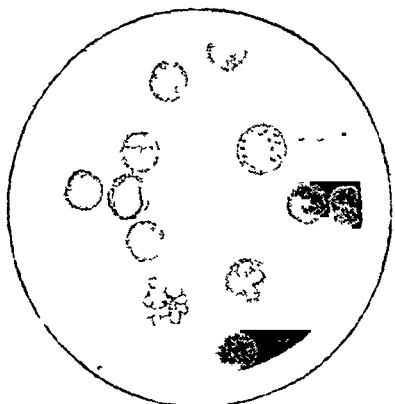
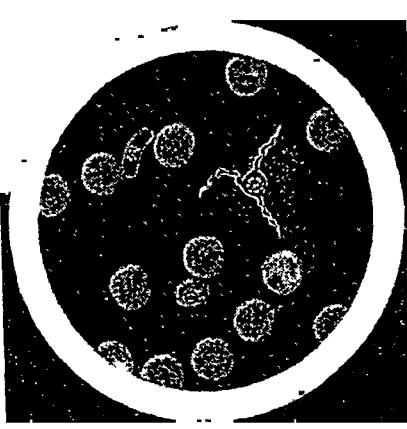
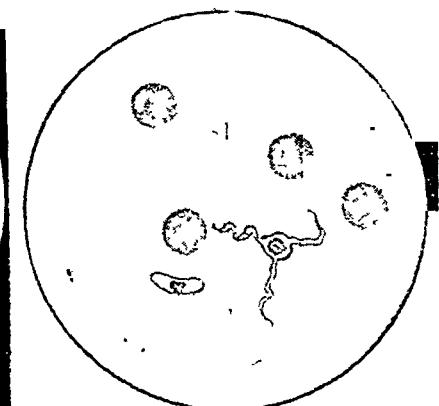
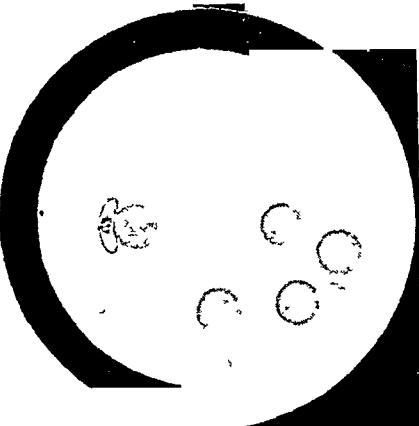
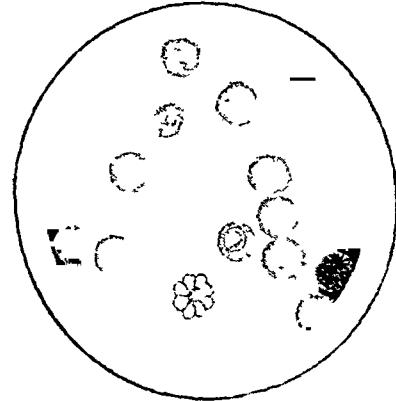
the blood of case No. 73 two varieties of Laveran body were found, the ring-shaped hyaline—malignant tertian—and the simple tertian. The patient, a child of ten, was admitted on the morning of the 25th with a temperature of 99°6. No quinine was given. The temperature rose to 104°6 in the evening, and dropped to 102 the following morning. At 4 P.M. it rose to 106°6, and five grains of quinine were given. The next morning the temperature was normal. An examination of the blood was made, and hyaline bodies were found, but no simple tertian. The child was ordered fifteen grains of quinine a day, and the temperature remained normal that day. On the 28th, at 6 A.M., it had risen to 104, hyaline bodies were still present in the blood, and in the evening it fell to 99°6. On the morning of the 29th the temperature again rose to 104, and the dose of quinine was increased to twenty grains a day. Hyaline bodies and a crescent were seen in the blood. After this there was no rise of temperature, except one to 100°5 on the evening of the 30th, and the child left the hospital, quite well, on the 3rd of December.

PART II—EXPERIMENTAL.

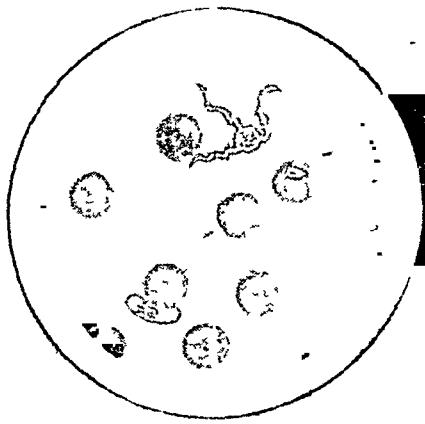
At the end of October some anopheles larvae were obtained from pools about two miles from the laboratory. The mosquitos hatched from them showed the spotted wings described by Ross, and in every way answered to his description of the anopheles claviger. Experiments were begun with these mosquitos, but could not be completed because they all died in a short time. The experiments were carried out as follows: The anopheles were allowed to bite a case of fever in which Laveran bodies were found in the blood; and on the following days bit healthy persons. All the mosquitos except two died within a week. One of the two survived for twenty-three days and the other for ten. None of the healthy people who were bitten by the mosquitos got fever, though, as this is a malarious locality, the experiment would not have been conclusive if they had. The mosquitos were kept in test tubes plugged with cotton wool, but after a time it was suggested that in this way they did not obtain enough fresh air. The end of the test tube was therefore broken off, and covered with mosquito netting, the other end being plugged with wool as before. This seemed to make no difference; in fact they died more rapidly than before. Feeding them on plantains was tried without effect, and latterly the mosquitos have not lived more than a day or two. Towards the end of the month it was so difficult to find mosquitos that the experiments could not be continued. In consequence of the failure of the monsoon, all the small pools for miles round the Residency are dried up, and the large ones are said to contain no larvae. Fever, however, continues as usual.

FEB. 1900.]

It would be a great help in future, if we could learn the exact time the Laveran body is supposed to take in travelling from the mosquito's stomach to its poison gland. The upholders of the mosquito theory of malaria cautiously refrain from making any pronouncement on this point, beyond stating that "the mosquito must be kept beyond the requisite time." What the requisite time is we are not told. Ross claims to have infected sparrows with proteosoma, through bites of mosquitos on the fourth or fifth day after they had sucked the blood of birds with proteosoma.

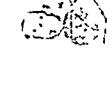
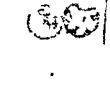
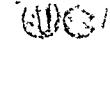
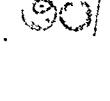
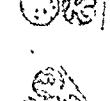
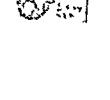
PLATE I.
SIMPLE TERTIAN.PLATE IV.
QUARTAN.PLATE II.
MALIGNANT QUOTIDIAN.PLATE V.
CRESCENTS ALONE. CRESCENT AND FLAGELLATING BODY.

He does not say, as far as I am aware, that it is the same in malaria, nor has any information been given us with regard to the period of incubation—the interval between the time when the healthy person is bitten ("infected") and the time he gets fever. As our experiments were not completed, the only conclusion we can at present draw from them is that, unless the malaria "parasite" takes more than twenty-three days to travel from the mosquito's stomach to its poison gland, the mosquito is quite uncertain as a carrier of malaria.

PLATE III.
MALIGNANT TERTIAN.*Explanation of Plates I to IV.*

| PLATE I. | PLATE II. | PLATE III. | PLATE IV. |
|---|--|--|---|
| <i>Simple Tertian.</i> | <i>Simple Quartan.</i> | <i>Malignant Tertian.</i> | <i>Malignant Quotidian.</i> |
| 1. Amœboid movement more active. 2. Pigment delicate, fine light brown, and copious 3. Protoplasm delicate in appearance, contour indistinct. 4. Blood corpuscle swollen, larger than normal, decolorised rapidly and completely. 5. Spores numerous and small, 15 to 20. | 1. Amœboid movement less active. 2. Pigment coarse, large, dark, and scanty. 3. Contour defined and distinct. 4. Blood corpuscle normal in size, decolorised slowly and incompletely. 5. Spores less numerous and larger, 6 to 12. | 1. Small and non-pigmented. 2. Annular or ring-shaped. 3. Blood corpuscles shrunk and dark in colour. 4. Forms crescents. | 1. Amœboid movement. 2. Non-pigmented or very fine granules. 3. Blood corpuscle smaller than normal and bronze-coloured. 4. Forms crescents. |

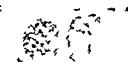
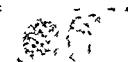
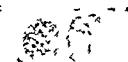
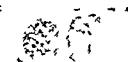
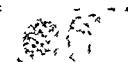
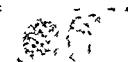
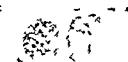
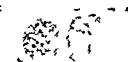
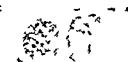
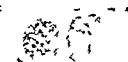
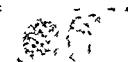
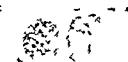
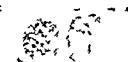
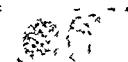
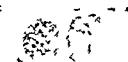
Tabulated list of Fever Cases with drawings of the kind of Laveran body found in each case.

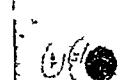
| November 1899. | No. | Age. | Sex. | Condition of Spleen. | Clinical type of Fever. | Kind of Laveran body present in the blood. | |
|-------------------|-----|------|------|-------------------------|---------------------------------------|---|---|
| 2nd | 1 | 6 | M. | Enlarged moderately ... | Quotidian | ... Simple tertian Double, Plate I. |  |
| 2nd | 2 | 16 | F. | Enlarged slightly | ... Quotidian | ... Simple tertian. Double. Plate I. |  |
| 2nd | 3 | 44 | F. | Not enlarged | ... Quotidian | ... Simple tertian. Plate I. |  |
| 4th | 4 | 12 | F. | Not enlarged | ... Quotidian | ... Simple tertian. Plate I. |  |
| 4th | 5 | 12 | M. | Enlarged greatly | ... Irregular | ... None found. | |
| 6th | 6 | 16 | M. | Enlarged slightly | ... Quotidian | ... Simple tertian and malignant tertian mixed. Plates I & III. |  |
| 6th | 7 | 35 | M. | Enlarged | ... Quotidian | ... Simple tertian. Plate I. |  |
| 6th | 8 | 7 | F. | Enlarged moderately ... | Quotidian | ... Simple tertian. Plate I. |  |
| 6th | 9 | 10 | M. | Enlarged moderately .. | Quotidian | ... Simple tertian. Double. Plate I. |  |
| 6th | 10 | 21 | M. | Not enlarged | ... Continuous | ... Simple tertian. Plate I. |  |
| 6th | 11 | 6 | F. | Not enlarged | ... Quotidian | ... Simple tertian. Plate I. |  |
| 6th | 12 | 25 | F. | Not enlarged | ... Tertian | ... Simple tertian. Plate I. |  |
| 7th | 13 | 20 | M. | Enlarged slightly | ... Quotidian | ... Malignant quotidian. Plate II. |  |
| 7th | 14 | 7 | M. | Enlarged slightly | ... Tertian | ... Simple tertian. Double. Plate I. |  |
| 7th | 15 | 1 | F. | Enlarged moderately ... | Quotidian | ... Malignant tertian. Plate III. |  |
| 7th | 16 | 26 | F. | Not enlarged | ... Unknown (only one day's fever) | None. | |
| 7th | 17 | 27 | M. | Enlarged slightly | ... Tertian | ... Simple tertian. Plate I. |  |

FEB. 1900.]

THE LAVERAN BODY FOUND IN MALARIAL CASES.

49

| November 1898. | No. | Age. | Sex. | Condition of Spleen. | Clinical type of fever. | ... | Aestivo-autumnal (crescents only.) Plate V. | Kind of Laveran body present in the blood. |  |
|-------------------|-----|------|------|----------------------|----------------------------|---------------------------------|--|---|---|
| | | | | | | | | | |
| 7th | 18 | 14 | M. | Enlarged much | ... | Quotidian | ... | Aestivo-autumnal (crescents only.) Plate V. |  |
| 7th | 19 | 25 | F. | Not enlarged | ... | Unknown (one day's fever) .. | None. | |  |
| 7th | 20 | 17 | F. | Not enlarged | ... | Quotidian | .. | Malignant tertian. Plate III. |  |
| 7th | 21 | 12 | F. | Not enlarged | ... | Not known | ... | Malignant tertian. Plate III. |  |
| 8th | 22 | 10 | F. | Enlarged greatly | ... | Not known | ... | None. | |
| 8th | 23 | 19 | F. | Enlarged slightly | ... | Quotidian | ... | Malignant tertian. Plate III. |  |
| 9th | 24 | 22 | M. | Enlarged slightly | ... | Quotidian | ... | Aestivo-autumnal (crescents only found.) Plate V. |  |
| 9th | 25 | 30 | M. | Enlarged slightly | ... | Quotidian | ... | None. | |
| 9th | 26 | 7 | F. | Enlarged slightly | ... | Quotidian | ... | Simple tertian (double). Plate I. |  |
| 9th | 27 | 3 | M. | Enlarged moderately | ... | Quotidian | ... | Simple and malignant tertian. Plates I and III. |  |
| 9th | 28 | 7 | F. | Enlarged greatly | ... | Tertian | ... | None. | |
| 9th | 29 | 1 | F. | Enlarged much | ... | Quotidian | ... | Aestivo-autumnal (crescents only found, as round extra-corporeal swarming bodies). |  |
| 10th | 30 | 50 | M. | Enlarged slightly | ... | Quotidian | ... | Malignant tertian. Plate III. |  |
| 10th | 31 | 25 | F. | Enlarged moderately | ... | Quartan | ... | Quartan, or malignant quotidian. Ultimately decided to diagnose as quartan. Plate IV. |  |
| 10th | 32 | 30 | M. | Enlarged much | ... | Irregular | ... | Malignant tertian. Plate III |  |
| 11th | 33 | 15 | M. | Not enlarged | ... | Quotidian | .. | Aestivo-Autumnal (crescents only). Plate V. |  |
| 11th | 34 | 29 | F. | Not enlarged | ... | Quotidian | ... | Malignant quotidian. Plate II. |  |

| November 1899. | No. | Age. | Sex. | Condition of Spleen. | Clinical type of Fever. | Kind of Leucocytic body present in the blood. |  |
|-------------------|-----|------|------|----------------------|----------------------------|--|---|
| | | | | | | | |
| 11th | 35 | 40 | F. | Enlarged slightly | ... Quotidian | ... None found. | |
| 11th | 36 | 8 | M. | Not enlarged | ... One day only | ... None found. | |
| 11th | 37 | 45 | F. | Not enlarged | ... Quotidian | ... Malignant tertian. Plate III. | |
| 14th | 38 | 12 | M. | Enlarged moderately | ... Quotidian | ... Malignant quotidian. Plate II. |  |
| 14th | 39 | 40 | F. | Enlarged slightly | ... Tertian | ... Malignant tertian. Plate III. |  |
| 14th | 40 | 40 | F. | Not enlarged | ... Quotidian | ... Aestival-autumnal (crescents only) Plate V. |  |
| 15th | 41 | 19 | M. | Not enlarged | ... Tertian | ... Aestival-autumnal. Crescents only found. Plate V. |  |
| 16th | 42 | 8 | M. | Enlarged greatly | ... Quotidian | ... Malignant quotidian. Plate II. |  |
| 16th | 43 | 5 | M. | Enlarged much | ... Quotidian | ... Malignant tertian and quotidian. Plates II and III. |  |
| 16th | 44 | 25 | M. | Enlarged much | ... Quotidian | ... Malignant tertian. Plate III. |  |
| 16th | 45 | 20 | M. | Not enlarged | ... Quotidian | ... Malignant tertian. Plate III. |  |
| 16th | 46 | 21 | F. | Not enlarged | ... Continuous | ... Malignant tertian. Plate III. |  |
| 16th | 47 | 11 | M. | Enlarged moderately | ... Irregular | ... None. | |
| 16th | 48 | 22 | M. | Not enlarged | ... Quotidian | ... Aestival-autumnal (crescents only found). Plate V. |  |
| 17th | 49 | 22 | M. | Not enlarged | ... Quotidian | ... None. | |
| 17th | 50 | 9 | F. | Not enlarged | ... Tertian | ... Simple tertian. Plate I. |  |
| 17th | 51 | 8 | M. | Enlarged much | ... Quotidian | ... Malignant tertian. Plate III. |  |
| 17th | 52 | 30 | M. | Not enlarged | ... Quotidian | ... None. | |
| 18th | 53 | 7 | M. | Not enlarged | ... Quotidian | ... Malignant tertian. Plate III. |  |

| November 1899. | No. | Age. | Sex. | Condition of Spleen. | Clinical type of Fever. | Kind of Laveran body present in the blood. | |
|-------------------|------|------|------|------------------------|----------------------------|--|---|
| | 18th | 54 | 50 | F. Enlarged moderately | ... Quotidian | ... None. |  |
| 18th | 55 | 1 | F. | Not enlarged | ... Continuous | .. Malignant tertian. Plate III. |  |
| 20th | 56 | 10 | M. | Enlarged much | ... Quotidian | ... None. | |
| 20th | 57 | 25 | F. | Enlarged slightly | ... Quotidian | ... Malignant tertian. Plate III. |  |
| 20th | 58 | 13 | M. | Not enlarged | ... Continuous | ... Doubtful kind of hyaline body found, diagnosis with microscope not made. |  |
| 20th | 59 | 23 | M. | Not enlarged | ... Tertian | ... Simple tertian, double. Plate I. |  |
| 21st | 60 | 27 | F. | Enlarged slightly | ... Quotidian | ... Malignant tertian (aestivo-autumnal). Plate III. |  |
| 21st | 61 | 27 | M. | Not enlarged | ... Quotidian | ... Malignant tertian. Plate III. |  |
| 21st | 62 | 3 | F. | Enlarge moderately | ... Irregular | ... Simple tertian, double. Plate I. |  |
| 21st | 63 | 10 | F. | Not enlarged | ... Continuous | ... None. |  |
| 21st | 64 | 16 | F. | Enlarged slightly | ... Quotidian | ... Malignant tertian. Plate III. |  |
| 21st | 65 | 25 | M. | Not enlarged | ... Continuous | ... Malignant quotidian. Plate II. |  |
| 22nd | 66 | 11 | M. | Enlarged much | ... Quotidian | ... Malignant tertian. Plate III. |  |
| 22nd | 67 | 25 | F. | Not enlarged | ... Quotidian | ... Malignant tertian. Plate III. |  |
| 24th | 68 | 16 | F. | Not enlarged | ... Quotidian | ... Simple tertian, double. Plate I. |  |
| 24th | 69 | 28 | F. | Enlarged much. | ... Irregular | ... Quartan. Plate IV. |  |

| November 1899. | No. | Age. | Sex. | Condition of Spleen. | Clinical type of Fever. | Kind of Laveran body present in the blood. |
|-------------------|-----|------|------|----------------------|-------------------------|---|
| 24th | 70 | 20 | F. | Enlarged much | ... Quartan | ... Quartan. Plate IV. |
| 24th | 71 | 18 | F. | Enlarged much | ... Quotidian | ... None. |
| 24th | 72 | 7 | F. | Not enlarged | ... Quotidian | ... None. |
| 25th | 73 | 7 | F. | Not enlarged | ... Quotidian | ... Malignant tertian and simple tertian. Plates I and III. |
| 25th | 74 | 50 | M. | Enlarged slightly | ... Quotidian | ... None. |
| 25th | 75 | 26 | F. | Not enlarged | ... Tertian | ... None. |
| 28th | 76 | 25 | F. | Enlarged moderately | ... Quotidian | ... None. |
| 29th | 77 | 3 | F. | Not enlarged | ... Quotidian | ... Malignant tertian. Plate III. |
| 29th | 78 | 4 | M. | Enlarged slightly | ... Quotidian | ... None. |
| 29th | 79 | 1 | F. | Not enlarged | ... Quotidian | ... Quartan. Plate IV. |
| 29th | 80 | 26 | F. | Not enlarged | ... Continuous | ... None. |
| 30th | 81 | 21 | M. | Enlarged moderately | ... Quotidian | ... Aestivo-autumnal (hyaline body only). |
| 30th | 82 | 40 | M. | Not enlarged | ... Quotidian | ... Simple tertian, double. Plate I. |

| Clinical type of fever. | Number of cases. | KIND OF LAVERAN BODY PRESENT IN THE BLOOD. | | | | | | No Laveran bodies found in the blood. | |
|-------------------------|------------------|--|----------|--------------------|----------------------|-----------------|--------|---------------------------------------|--|
| | | SIMPLE. | | AESTIVO-AUTUMNAL. | | | Mixed. | | |
| | | Simple tertian. | Quartan. | Malignant tertian. | Malignant quotidian. | Crescents only. | | | |
| Quotidian | ... | 54 | 11 | 1 | 16 | 4 | 7 | 4 | |
| Tertian | ... | 9 | 5 | 0 | 1 | 0 | 1 | 0 | |
| Quartan | ... | 2 | 0 | 2 | 0 | 0 | 0 | 0 | |
| Irregular | ... | 5 | 1 | 1 | 1 | 0 | 0 | 2 | |
| Continuous | ... | 7 | 1 | 0 | 2 | 1 | 1 | 0 | |
| Not known | ... | 5 | 0 | 0 | 1 | 0 | 0 | 4 | |
| Totals | ... | 82 | 18 | 4 | 21 | 5 | 9 | 4 | |

Percentage of cases in which no Laveran bodies were found in the blood 25·6.

ENTERIC FEVER IN NATIVES OF INDIA.

BY ANDREW BUCHANAN, M.A., M.D.,
MAJOR, I.M.S.,

Superintendent, Central Jail, Nagpur, C.B.

(Continued from page 448)

IN case B. (Udia) there was a well marked relapse (see Chart). It came on eight days after recovery from the first attack and lasted for fourteen days. He had gained 3lbs. in weight between the twenty-second and twenty-eighth days. He ultimately recovered. Whipham, of St. George's, states that fatal cases among relapses are rare.

| Day of disease. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 |
|-----------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Udia A. M. . | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 3 | 4 | 1 | 1 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4 | 4 | 4 | 4 | 5 | 4 | 3 | 1 | 2 | 2 | 3 | 0 | 0 | |
| B P. M. ... | 2 | 4 | 2 | 3 | 2 | 3 | 3 | 4 | 5 | 4 | 4 | 2 | 3 | 7 | 3 | 4 | 4 | 3 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 5 | 5 | 6 | 5 | 5 | 4 | 4 | 3 | 4 | 5 | 2 | 4 | 4 | | | |

Appetite.—The craving for food in convalescence is a special peculiarity of enteric. It was most marked in B.; about the nineteenth day when the T. was nearly normal he began to ask for more food. For some days his entreaties for more food were most pressing, and he said he was dying for want of it. It was in this case that the marked relapse occurred, but whether the relapse was due to an error in diet or to other causes, it is difficult to say. In the boy at Jullunder the T. was one morning found higher than usual. On enquiring it was found that some of his relations had given him *chappaties* (scons) the day before. No doubt error in diet will produce a rise of temperature, but it is doubtful if this would cause a regular relapse.

Thirst was marked in most of the cases.

Cause.—It will be advisable at first to notice the distribution of cases. They were all in different enclosures—two in the North Octagon (but in separate enclosures), one in the South Octagon, one in the Hospital and one in the female Barrack. Next the possible sources may be considered: these are food and water.

A. Food.—Milk and meat may be left out as none of the five had been getting either. The stools of the patient who died in 1894 had been buried in the garden. (The stools and urine of diagnosed cases are burned.) May the infection have been conveyed by the vegetables from the garden? Sir Charles Cameron in a lecture delivered in Dublin five years ago referred to the possibility of enteric infection being conveyed by the clay which adheres to the rootlets of radishes. Radishes were supplied from the garden in July. On examining these after they had been washed (according to the Native idea of washing), I have found earth adhering to the clusters of rootlets. The vegetables are,

however, boiled, and the enteric bacillus would not stand much chance of survival in this process.

B. Water.—There are two sources of water-supply for Jail—(1) the wells of which there are eleven, and (2) the Ambajheri water-works supply. The fact that all these infected drank water from different wells is sufficient to put out of count the well water as the cause. The Ambajheri water is supplied to all the parts of the Jail in which cases occurred. This tends to throw suspicion on the Ambajheri water. The Ambajheri water is supplied to the City and Station of Nagpur; if this water were the cause of the enteric fever one would expect to find cases among the population of the City and Station.

There were three cases there. He saw two at least of these with Dr. Harris, and he had no doubt about the third being a case of enteric. In a separate paper (read at the Nagpur Clinical Society), reference has been made to the prevalence of diarrhoea in July and August, both in the Jail and City, to the connexion between diarrhoea and enteric fever, and to the possible source of contamination of the Ambajheri water.

Samples of the water from the wells and from the water-works were sent to Mr. Hankin, Agra Institute, for examination. He reported that he found a bacillus like the enteric bacillus in the water from Ambajheri No. 1 A, and from the Hospital well No. 4 D.

Treatment.—The chlorine water treatment as recommended by Yeo was adopted.

A discussion on this paper followed:—

Surgeon-Colonel Newman had seen the cases, and there was no doubt they were cases of enteric. He had just received details of four cases (Natives) which had occurred in Mandla Jail. He was quite convinced that enteric fever did occur among Natives.

Assistant-Surgeon Basak stated that many medical men deny that enteric fever occurs amongst Natives on the ground that it has not been proved by post-mortems. He referred to the theory which accounts for the rarity of enteric among Natives as they do not eat so much meat as Europeans. He enquired whether the deafness might possibly have been due to large doses of quinine. He referred to the difficulty in diagnosing enteric from remittent fever. He thought the relapses were due to errors in diet.

Surgeon-Captain Faichnie said that he had then under his care several cases of enteric from among the European troops at Kamptee. He had not been able to trace the cause. He referred to the difficulty in recognizing the eru-

tion in India owing to prickly heat, flea-bites, &c. Relapse was due generally to an error in feeding. He enquired if it had been noticed that the pulse comparatively slow was a sign usually observed in enteric.

Surgeon-Major Harris remarked on the frequency of constipation in the cases of enteric fever which he had met with at Calcutta, at Simla, and at Nagpur, not only in the early stage, but throughout the course of the fever. He had not especially noticed a condition of the tongue which was pathognomonic of typhoid fever in the cases which he had treated. He enquired whether epistaxis had been noticed to occur in Dr. Buchanan's cases as he himself had frequently found it in his cases, and remarked that Sir William Broadbent had drawn attention to the value of this symptom in suspected cases of enteric fever. He made some remarks on the supposed causes and frequency of relapse in enteric fever. In his opinion the cause of relapse was obscure, and it was not always traceable to the premature taking of solid food, as he had observed it in cases where he was positive that no solid or improper food had been taken. Sir W. Broadbent also was of opinion that solid food was not the most common cause of relapse. In the speaker's opinion a relapse was usually less severe than the primary attack. The heavy aspect, slight enlargement of the spleen and frontal headache, coupled with abdominal tenderness, always led one to suspect first the existence of typhoid. He had seen cases of typhoid fever amongst Natives in Calcutta and at other places, and verified the diagnosis in some cases *post-mortem*. He had not noticed either in Europeans or Natives the eleventh-day depression which had been alluded to by Dr. Buchanan; excepting in one patient of Dr. Buchanan's at the Central Jail, he had not himself seen the characteristic rose spots of the enteric fever amongst Natives. He touched on the difficulty in India even in Europeans of always finding typically characteristic spots in cases of typhoid. He had seen the ulcers in the Peyer's patches in the case referred to by Dr. Buchanan as having died in 1894. He briefly referred to the antiseptic treatment of enteric fever by carbolic acid, and a solution of chlorine salol, &c.

Surgeon-Colonel Little, Sanitary Commissioner, Berar, said he had never seen any enteric among Natives. He mentioned the occasional occurrence of ulcers in the small intestine in cases of dysentery.

Dr. Revie, Free Church Mission, Wardha, said he had seen two cases of enteric in Natives.

Dr. Agnes Henderson spoke of the value of Ehrlich's test as a diagnostic agent; it was of negative rather than positive value; if it did not give the red froth when mixed with urine, the case was not one of enteric.

Dr. Buchanan in reply to the questions put, said that there had been no epistaxis, the

deafness was not due to quinine as the patients were not getting quinine at the time, meat-eating theory would not hold good, for Sikhs and other Natives who eat meat do not suffer from enteric any more than non-meat-eating Natives. The pulse was in some cases slow when the temperature was high, but not to a marked degree. In the boy at Jullunder a rise of temperature was, it is believed, due to an error in diet, but it is most improbable that the relapse in enteric coming as it does at fairly definite time and lasting for a fairly definite time is not due to an error in diet.

I fear I have already taken up too much space, but in a subsequent issue of the journal I should like to give an account of some of the cases in which the diagnosis was verified by *post-mortem* examination, also of some cases in which the diagnosis was rendered somewhat difficult owing to the presence of complications and of some cases such as acute tuberculosis, cerebro-spinal fever and remittent fever which have been in hospital at the same time as the enteric cases and in which the differential diagnosis was a matter of some difficulty.

Besides the case of the ambulatory type, there were nine cases in which death occurred, and in which *post-mortem* examinations were made. In these nine are included four cases in which the *post-mortem* examinations were made by Captain Jennings, I.M.S., while I was on furlough.

Fatal Case I.—Death on 20th day.

Perforation.

The first case was specially interesting owing to the fact that the peculiar symptoms led to a diagnosis of pneumonia.

Dewaji, age 20, was admitted into hospital on 28th September 1895. He had fever for three days before admission.

7th day from onset—Delirious at night, spleen enlarged.

10th day—Headache, delirium, abdominal pain, gurgling in left iliac fossa, cough, fine crepitus over both bases. The crepitus was almost as fine as that heard in pneumonia. Double pneumonia suspected.

11th.—Sputum rusty.

12th.—Constantly drowsy and delirious at night.

13th.—Three motions, stools foul smelling, great thirst.

15th.—Crepitation coarser and like crepitus redux.

16th.—Four motions, muddy colour, tongue dry and cracked, drowsy, more delirious.

19th.—Six motions, thin, yellowish like pea soup, pain in abdomen greater, vomited six times, some difficulty in breathing. Tongue very dry and cracked.

In the evening severe vomiting, tympanites, and severe pain in abdomen. Stools have foul smell.

20th.—Died.

Post-mortem.—Lungs, both bases congested but parts cut from them float, the weight of lungs is only $10\frac{1}{2}$ and 11 ounces. Nothing like pneumonic consolidation.

Intestines in some parts matted together with lymph.

Small intestine—all except about 30 inches of the lower part of the ileum appeared normal. If this 30 inches be divided into three parts of 10 inches each, in the upper part can be seen a few Peyer's patches apparently normal and one or two partially ulcerated—the ulceration not extending beyond the Peyer's patch. In the middle part all the Peyer's patches are ulcerated, some ulcers about $\frac{1}{2}$ inch in diameter, the largest is $1\frac{1}{2}$ inches by $\frac{3}{4}$ inch. The longer diameter is with the length of the intestine, it is opposite the attachment of the mesentery, and from its surface is hanging a yellow slough which is as large as a small bean. Another ulcer also has a similar slough attached to it, and at the base of the slough is a small perforation. In the surrounding intestine there is on the outer coat a considerable exudation of lymph and the coils of intestine are firmly matted together, so it would appear that there was not a free communication between the bowel and the general abdominal cavity.

In the lowest part the ulcers are more numerous and they are of larger dimensions.

The intestines were filled with the yellow faeces.

REMARKS.

The temperature chart shows a gradual rise between the 8th and the 14th day. The lung symptoms were peculiar; the crepitation indicated pneumonia and the rusty sputum seemed to confirm this. It is not certain if one ever finds the truly consolidated lung as in ordinary pneumonia, or if there is some special kind of lung inflammation in enteric fever.

The lungs were very light. How long does it take for resolution to take place in a lung after ordinary pneumonia?

Fatal Case II.—Death on the 58th day. Perforation.

Ranjan, male, age 24, was admitted into Hospital in October 1895 for Jaundice. He improved up till the 4th November when he complained of fever.

On the 5th day of the disease, it was noticed that the temperature had a gradual tendency upwards, and this led to a suspicion of enteric fever. His condition was as follows:—

Slight tenderness over abdomen, slight gurgling in left iliac fossa. Tongue uniformly coat-

ed, not red at edges, no diarrhoea (stools not seen), jaundice getting less: slight cough, slight deafness, no sweating, pulse 114. Headache felt behind the eyes and at back of head. Spleen enlarged (about $1\frac{1}{2}$ lbs.), it is doubtful if this enlargement had come since the commencement of the present illness. Enteric fever was diagnosed and the chlorine water treatment was ordered. The full history of the case will not be given. The more important points are—

- (1) On the 13th day sudamina appeared on the abdomen.
- (2) The tongue was not characteristic of enteric in the early stage.
- (3) No rose spots were seen.
- (4) In the 4th week the patient became much worse; from the 20th till the 25th day the evening temperature was above 104. On the 22nd and 24th it was 105, and on the 23rd it was 105·4.
- (5) White particles were noticed in the stool.
- (6) There was oedema of the abdominal wall.
- (7) Drowsy.

On the 30th day he was very low, delirium was marked, pulse 144 and could scarcely be counted: very deaf.

From the 32nd day till the day before his death he gradually improved. On the 38th day the pulse was 120 and could be counted more easily; there was every hope that he was going to recover. Next morning, however, there were symptoms which left no doubt that the much dreaded perforation had occurred—a sudden and severe pain in the abdomen, rigor, legs drawn up—and after an hour or two vomiting.

He died 24 hours later. In the case recorded recently in the Clinical Journal by Sidney Coupland death occurred 33 hours after the perforation.

Post-mortem.—Main points: abdominal wall adherent to intestines and omentum.

Inner side of abdominal wall and intestines very red and inflamed.

Small intestines bright red colour, matted together with lymph.

Small perforation in small intestine over bladder; lymph and pus are collected around this.

Ulcers in lower 3 feet of ileum: 4—about $\frac{1}{4}$ inch wide—seems to have been healing and are nearly healed. One large ulcer $1\frac{1}{2} \times \frac{3}{4}$ inch, with small perforation at base.

3. MIRROR OF HOSPITAL PRACTICE.

ECTOPIC GESTATION—A SERIES OF EIGHT CASES TREATED BY ABDOMINAL SECTION.

BY A. J. STURMER,

LIEUT.-COLONEL, I.M.S.

Superintendent, Government Maternity Hospital, Madras.

(Continued from page 20.)

THE injection of morphia is, I consider, most detrimental ; it helps to keep up the chloroform sickness ; it prevents the kidneys from doing their work properly, and it, above all, masks symptoms which should be apparent. In my practice it is certainly not used in two per cent. of the cases. I can recommend the injection of the litre of salt solution (gr. 60 to the pint). It has certainly alleviated the great craving for water after operation and lessened shock, for patients seem to me less restless. My nurses remarked on the sudden change in cases of abdominal section ; they were unaware that any new line of treatment had been adopted. On the evening of the 2nd day a pill of calomel and hyoscyamus is given, and on the third morning, sulphate of magnesia mixture every 2nd hour, until the bowels act freely. This is a far better practice than the old one of keeping the bowels confined, until the 7th or 8th day.

On the 4th day some broth is given, by preference weak, and by the end of the week, solids are allowed, if the patients fancy them ; but I never press them to eat.

The abdomen is rarely flushed out with water, and seldom or never is a drainage tube used. The abdominal wound is closed by deep silk-worm gut sutures, penetrating all tissues from skin to peritoneum, and superficial chromic gut sutures ; the former are removed on the 8th or 10th day ; the latter on the 10th day or later. In some cases the walls are sutured in layers. The dressings consist of iodoform gauze, sterilised gauze and a cotton pad, over which are broad strips of strapping and a many-tailed flannel binder. The dressings are sometimes changed on the 4th or 5th day, sometimes not until the stitches are removed.

Case I.—Hindu, *aet.* 30, admitted 30th October 1898, complaining of a discharge of blood for the last three months, with slight pain on right side of lower abdomen. Has had 6 children, the last five years ago. Menstruation regular up to last three months, and painless. *Per vaginam* : Vagina hot, bowels loaded, perineum lacerated. In Douglas' pouch is a soft and baggy swelling ; on the right side there is marked pulsation, and a sausage-shaped swelling reaching as high as the

anterior superior spine ; it is not very movable. On the left side is a swelling, the size of a hen's egg, cystic and movable. Pelvis clear.

On the 31st the patient was operated on for removal of ruptured extra-uterine gestation cyst (right tubal), and of both tubes and right ovary and resection of left ovary. On opening the abdomen, the uterus and right tube came into view ; the latter was much enlarged, and there were many adhesions which were easily broken down. The right ovary was cystic and of the size of a turkey's egg ; behind the uterus was the baggy swelling felt per vaginam ; on trying to raise it, the finger penetrated it, and black-clotted blood was removed in large quantities. The whole of Douglas' pouch, and the left side of the pelvis, as well as the space between the bladder and uterus, were filled with black clot. The left tube was enlarged and very vascular, and on the left ovary was a cyst, the size of a marble ; this was resected and the edges brought together with a continuous chromic gut suture. The right tube and ovary were removed, as well as the left tube.

It was seen after removal that the right tube had ruptured at one point, and that the haematocele was evidently due to the blood which had escaped from this rent. Attached to the rent was the torn amniotic sac ; just under the rent, and in the tube itself was a large, hard mass of blood clot. The rent was situated about the middle of the tube, on either side of it the tube seemed of normal calibre, but the outer end was expanded into a sac, the size of a large egg, which was full of black clot. Gestation had evidently taken place into the ruptured tube ; the large clot found at the extremity implies that the tube was not pervious ; if it had been, the blood would have drained out in the abdominal cavity ; it certainly was not pervious after removal. The right ovary was cystic and apparently unfit to generate ova ; and if the right tube was closed, fecundation must have taken place in the left tube from an ovum supplied by the left ovary which, instead of finding a nidus in the uterus, travelled across that organ into the right tube, and there enlarged, until the tube could no longer contain it. This is not a very rare occurrence, and curiously enough the ovary on the opposite side to the ruptured tube is the one generally which has the corpus luteum. No embryo was discovered. The woman did not consider herself to be pregnant.

She went on well after the operation up to the 30th October, the highest temperature recorded being 99°. The discharge per vaginam was noted as being offensive on the 24th, and vaginal douches were ordered. The stitches were removed on the 28th, and the wound was fairly healed. On the 30th, the temperature rose to 101·2, but fell after an enema to 99°. On the 1st November it again rose to 101°, and on the 2nd

to 102·8. A vaginal examination was made, and a hard mass, filling up the whole of Douglas' pouch and spreading on either side to the pelvic walls and reaching as high as the umbilicus, was discovered; this was evidently inflammatory. Linseed poultices to the abdomen and hot vaginal douches 110°—115° were ordered. On the 3rd and 4th the temperature was normal; but on the 5th it again rose to 102·4, and she had some diarrhoea; the douches were stopped. On the 6th the temperature rose to 103·2; the note is: "There is a well-defined and rounded swelling to be felt in the lower abdomen, more or less central. *Per vaginam*: Thickening noted at last examination is felt much higher up, and is softer, white creamy discharge on finger." On the 7th the temperature was normal and the diarrhoea had ceased. On the 8th, at 6·30 P.M., she had a copious loose and very offensive dark-brown motion; at 9·30 P.M., the temperature suddenly fell to 96°, and she broke out into a cold sweat; face was pinched. Pulse 76, small and weak; no pain in abdomen which is flat; no restlessness. Has been taking Dover's powder; this was stopped and a stimulant mixture ordered instead. There was no pus in the motion. On the 9th the abdomen was flat, soft on left side; the cicatrix seems adherent to subjacent parts; no tenderness; no tympany. *Per vaginam*: Uterus thrown forwards; cervix looking downwards and slightly backwards; still hardness filling up Douglas' pouch and going into the pelvic walls; hardness stony, more marked on right side. After this she continued to go on well, the temperature remained normal, and the diarrhoea ceased. On the 15th November the effusion was noted to be gradually disappearing, and hot douches and glycerine tampons were ordered. On December 4th the note is: "The effusion has all disappeared, except a little thickening at the brim. Uterus in very good position; cicatrix has stretched a little. Has been walking about." Was seen on the 12th December, when she said she was quite well and was discharged.

The swelling, judging from the fever, was inflammatory, but there never was any indication that it had gone on to suppuration. I am inclined to think that it was due to blood extravasation which set up a certain amount of inflammation, and that the blood was got rid of by the bowel; the sudden collapse and the large, dark offensive motion pointing more to blood than pus. The stools were carefully searched daily for the latter.

Case II.—Eurasian, *act. 38*, admitted 5th January 1899, complaining of pain in lower abdomen, of 3 weeks' duration and scanty periods for the last three months, the discharge coming on irregularly, that is, lasting for 2 or 3 days, then stopping for 4 or 5, and reappearing and keeping on for a day or two. Has had 8 children, the last 4 years ago; menstruation regular and painless; passed a piece of "skin" *per vaginam* shortly after

Xmas. *Per vaginum*: Considerable effusion in Douglas' pouch, tender to the touch; says she is in great pain; was seen at the Egmore Dispensary, where pelvic haematocele was diagnosed, and was in consequence sent to hospital, where hot poultices to the lower abdomen, and Dover's powder were ordered. On the 18th January the note is: "Cervix at the outlet jagged; great mass of effusion filling up the whole of Douglas' pouch and pushing the uterus forward, jamming it against the pubes; mass is soft; hypodermic needle inserted and red serum withdrawn." On January 20th, 21st, 23rd and 24th she had a red discharge, very scanty. Pain in the lower abdomen has all disappeared; poultices and Dover's powder stopped. February 1st, note: "Uterus pushed forward, cervix at outlet, mass behind soft, extends upwards to within three finger breadths of the umbilicus. Uterus can be separated from the mass behind. Swelling goes into the pelvic walls; it is very elastic and has not decreased in size. *Per rectum*: The finger cannot get behind the swelling. There is milk in the breast. Temperature so far has been normal." On the 4th February the abdomen was opened in the middle line for the removal of an old ruptured extra-uterine gestation cyst—left-tubal—with removal of left tube and portion of left ovary. Operation commenced at 8·25 A.M., finished at 9·40 A.M. After opening the peritoneal cavity, the finger felt the uterus to be large, and behind it, closely attached to its posterior surface, and extending deep into Douglas' pouch, was a rounded tumour. This was gradually separated from its adhesions and brought to the surface. It was found to have been formed in connection with the left tube; about two-thirds of the tube could be traced up to the tumour, but the rest of it disappeared into the outer wall of the swelling. The fimbriated end could not be discovered. The broad ligament was pierced and ligatured in a double loop with No. 4 silk, one portion including the tube and portion of the ovary and the parts cut away. There was no bleeding during the separation of the adhesions, but after removal of the tumour, a little oozing took place deep in Douglas' pouch; this soon stopped with sponge pressure. The parts removed consisted of a tumour, the size of a cricket ball. Entering the tumour was the tube, the lower third of which seemed to be expanded and continuous with the outer wall of the tumour. The tumour on section was found to contain thick clotted tarry-looking blood; enclosed within was a sac which was complete, except at that part peeled off from the back of the uterus. The tube was impervious to a fine probe, a corpus luteum was found in the ovary.

After-history.—There was slight red discharge from the vagina for the first three days. The maximum temperature recorded was 100°. She was discharged on the 27th January.

(To be continued.)

A CASE OF INFLAMED STRANGULATED INGUINAL HERNIA : OPERATION : REMOVAL OF 4½ INCHES OF OMENTUM : RECOVERY.

By R. J. MARKS,
MAJOR, I.M.S.,

Civil Surgeon, Etawah, N.-W. P.

HARDYAL, Brahmin, aged 40 years, was admitted into the Sadr Dispensary, Etawah, on the morning of 15th September 1899.

Previous history.—Up to two days before admission he had not been troubled at all with his bowels. He stated that there had been for some time a swelling on the right side of the scrotum, but could not give any history or date of its appearance.

History of present complaint.—Two days ago, whilst straining at stool, he felt severe pain in the right groin, and noticed that the swelling had greatly increased. From that time, until admission, he had not been able to pass either flatus or motion, and experienced great pain. At his home he used hot fomentations and some native applications, but without benefit.

Present condition.—On examination there was found a large tumour, the size of a good sized melon, intensely inflamed on the right side of the scrotum, the neck of the tumour extending up to the external abdominal ring. The tumour was very tense and brawny and dull on percussion.

On admission a large soap and water enema had been given, but without effect.

Operation.—The man was placed on the operation table, and after chloroform had been administered, taxis applied, but without effect.

The sac of the tumour was then exposed in the usual way, and the constriction divided outside the neck of the sac. Taxis again applied, but without effect.

The sac was then opened, and the tumour was found to consist of a large portion of omentum and about six inches of gut. The neck of the sac was then divided. The whole of the omentum was so strangulated and disorganised that it was not thought advisable to return it. The omentum was adherent in parts to the sac.

The omentum was accordingly pulled down, spread out and sutured with silk above the point of strangulation, and 4½ inches in length and 6 inches in breadth divided and removed. The sutured end was carefully washed and returned to the peritoneal cavity. The six inches of bowel, which was very congested, was returned. The neck of the sac was ligatured and the external pillars of the ring sutured together. An incision was made in the bottom of the sac, at the inferior end of the scrotum, and drained. The wound dressed.

On the second day after the operation, as the bowels had not been moved, an oil and soap and water enema was given with only slight effect. A mixture of mag. sulph. and soda sulph. was then given three times daily for two days, and after this he never had any trouble with his bowels.

The temperature during the four days following the operation never rose above 101°. The patient made an uninterrupted recovery, and left for his home, cured, as far as one could judge, a month after the operation.

My thanks are due to Assistant-Surgeon Shanker Lal for his able assistance in the operation and notes on this case. The case may be of interest on account of the uninterrupted recovery following the removal of so large amount of omentum.

SURGICAL CASES.

By D. M. DAVIDSON, M.B., C.M.,
MAJOR, I.M.S.,
Civil Surgeon, Mooltan.

I.—CASE OF CUT THROAT.

ON the 11th July 1899, while I was at the hospital, a man named Makko, aged 20 years, was brought for treatment. His throat was apparently cut from ear to ear and his clothing was soaked in blood. The wound had been inflicted by a butcher and was of peculiar shape. It was irregularly V shaped, the apex of the V being immediately opposite the middle of the trachea and corresponding with the situation of the first ring of that tube. The right arm passed upwards and outwards 2½ inches, while the left was 5½ inches long and curved across the neck in such a fashion that its upper extremity was 1½ inches below the left mastoid process. The greater part of the incision was more or less superficial, but at its centre it was sufficiently deep to sever at least half of the trachea, the incision in this tube being more complete towards the left side. Here the wound was so deep that it was at first feared that the oesophagus had also suffered. The line of incision in the trachea passed immediately below the cricoid cartilage. Fortunately the main vessels of the neck escaped. On looking up the trachea the vocal cords were easily seen covered with clots of blood.

As the patient was attacked with severe spasms of the glottis on attempts being made to approximate the cut ends of the trachea, it was found necessary to perform a tracheotomy. The cut ends of the trachea were then united with thick silver wire, except at the deep pouch to the left silk ligature was used.

The edges of the incision in the other tissues of the neck were then sutured together.

The patient was fed per rectum for two days, and then through an oesophageal tube for other two days. As he objected to this form of alimentation, fluids were continuously given by the mouth. On the 26th the tracheotomy tube was removed as well as the silver sutures which were easily felt under the skin and cut down upon. He was discharged cured on the 27th August, and on discharge could speak in a low voice. His respiration was however still somewhat lowered.

II.—NOTE ON THE GUINEA WORM.

MANSON on page 516 of his Tropical Diseases states "until this process is completed she resists extraction; possibly the hook at the end of her tail assists her to maintain her hold."

There is a much more rational explanation.

Recently in two cases I have attempted to extract guinea worms by incision. In the first case part of the worm was already protruding.

The process of extraction proved very difficult. The body of the worm was not merely coiled under the skin but was interlaced with the cellular tissues, backwards and forwards, upwards and downwards, and was extracted only after a tedious dissection.

In the second case the patient presented a fluctuating, smooth, slightly painful swelling in the ham. The swelling was the size of a pigeon's egg. On incision a quantity of grumous pus was discharged, and along with the pus about four inches of the body of a guinea-worm appeared. This part of the body had two knots on it—one of the knots being double. After a prolonged dissection about three more inches of the worm was extracted, when it was considered advisable to suspend operations as the body of the worm passed under the deep fascia into the ham. Here to the worm was found interlaced the cellular tissue. No amount of pulling could have extracted it entire.

INTERNAL JUGULAR VEIN ACCIDENTALLY OPENED AND STITCHED UP.

By W. D. SUTHERLAND, M.B.,
CAPT., I.M.S.,

Civil Surgeon, Sangor.

MT. PARMIA, *act. 25*, had suffered, some years ago, from pain and swelling on the right side of the neck, and later from a discharge of pus from a sore on the posterior triangle of the neck. This sore had eventually healed, and its cicatrix, which had undergone keloid degeneration, was visible, lying along the posterior border of the sterno-mastoid muscle. Soon after her admission into jail, the patient complained of pain behind the scar, and on examination it was found that the lymphatic glands in this region,

which had previously been found to be somewhat enlarged were now tender and swollen. From the history of the case and the appearances, it was evident that one had to deal with tuberculous glands, which were breaking down, and it was decided to operate and remove these.

On the 24th August the parts having previously been rendered aseptic by turpentine, hot water and soap, and a compress of 1-20 phenol solution left on all night, an incision was made over the most prominent part of the swelling, and then one endeavoured to dissect out the glands without disturbing their contents. Most of the dissection was carried out, and the glands were freed on all sides, save at their deepest attachments. They passed forwards on to the pharynx and carotid vessels. Cautiously one felt one's way, mapping out the position of the structures lying underneath and alongside of the sterno-mastoid, when all of a sudden a gush of venous blood filled the wound. With the finger one stopped the flow, and on sponging out the blood which had escaped, one found that, at the very bottom of the wound, the internal jugular vein had been opened, for about $\frac{1}{2}$ of an inch, longitudinally. One of Greig Smith's catch forceps was guided to the breach in the vein, along the finger which compressed this, and snapped on. On removing the finger, blood was found to flow, so another forceps was applied, and then all bleeding ceased. The glands and matted tissue were rapidly cleared away, and then one proceeded to deal with the wound in the vein, which, by the way, was on its posterior aspect, so jumbled about had the parts become from old adhesions.

A chromic catgut suture was passed through the vein wall at the end of the incision, then between the points of the two forceps and then through the wall at the end. Both ends were pulled, while one forceps was removed, and, as no blood escaped, the other forceps was removed and the ends of the suture tied.

The wound was then sprinkled with boric acid and the edges opposed by deep silkworm gut sutures, and a dry pad of absorbent cotton wool applied and fixed by a piece of adhesive plaster.

There was slight oozing for the first 24 hours, so a fresh dressing was applied; but the wound gave no trouble afterwards. On the 15th September she was discharged from hospital quite cured, with a very small scar.

The only points of interest about this case are the manner in which the breach in this important vessel was closed, and the great matting together of the tissues which made it impossible to avoid damaging the vessel, and which had pulled the vein round, so to speak, so that it was cut into on what was really its postero-internal surface.

NOTES ON SOME SURGICAL CASES
TREATED IN THE SAMBU NATH
PUNDIT HOSPITAL, 1899.
By D. G. CRAWFORD,
MAJOR, I.M.S.
Offg. Surgeon-Superintendent.

Case No. 1. Liver Abscess.—Chuni Lall, Hindu male, nineteen, a resident of Calcutta, was admitted on 17th January 1899, complaining of enlargement of liver and spleen, said to be of about one year's standing. He had suffered from dysentery about six months before. He complained of severe pain in the right side, over the liver, for the past ten or twelve days. There was a distinct bulging between the sixth and seventh ribs in the posterior axillary line. The liver dulness began at the 4th intercostal space above, its lower border extended one inch below the margin of the ribs. The spleen was much enlarged, its lower border reaching to one inch below the umbilicus. The aspirating needle was inserted into the bulging prominence, and a little thick pus extracted. An incision was then made with a knife, and about six ounces of pus mixed with blood was evacuated. There was free bleeding, so the cavity was plugged with strips of lint, and a bandage put round the body. Next day the strips of lint were withdrawn, and a drainage tube inserted. He had slight fever, temperature 101 and 100, on the evenings of the 18th and 20th; after which the temperature remained normal till the 27th, when it rose to 101, and he suffered again from fever daily until the 31st January, the highest temperature being 102 on the 29th. By 8th February the wound was superficial, and had quite healed by 6th March, when he was discharged cured; the spleen also being considerably diminished in size.

Case No. 2. Liver Abscess.—Khedu Chamar, Hindu male, twenty-six, was admitted on 25th June 1899. He complained of pain in the right side, with fever in the evenings, for about six weeks past. There was no history of dysentery, but he admitted that he was a free drinker. The liver was much enlarged, and tender to the touch. Dulness extended from the 4th intercostal space to the level of the umbilicus, where the lower border could be felt, the left border of the right lobe extending about two inches to the left of the middle line. The spleen was not enlarged; the urine was examined, and found free from sugar and albumen. On the 26th and 27th his temperature varied from 99·2 to 100·8. On the evening of the 28th it rose to 103·2. On the morning of the 29th his temperature was 99·8. That morning, under chloroform, an aspirating needle was inserted into the liver in the nipple line, two inches below the costal margin, and pus flowed freely out at once. A free incision was then made beside the needle, and the abscess cavity opened, when a very large quantity of pus came out. The cavity opened was some four inches in diameter; the forefinger could just touch its walls all round, except at

the upper inner corner, where there was a smaller cavity communicating with the first, into this a probe passed to a depth of six inches from the incision in the skin. A drainage tube of that length was put in. For several days after the operation there was free discharge of both pus and bile. The cavity was douched out twice daily with a lotion composed of two drachms of tincture of iodine to a pint of warm water. On the 1st July his temperature rose to 100·2, the only occasion on which it rose to 100. His pulse remained rapid for a long time, but gradually fell from 124 to 104, and on 17th July for the first time fell below 100. On 24th July the tube was somewhat shortened. By 3rd August the abscess cavity appeared to be contracted to a mere sinus, four inches long. On 31st July the pulse came down to 88, but on 5th August it rose again to 100. On the 7th it fell again to 90, and kept at about that rate till the morning of the 10th August, but on the evening of that day, without apparent cause, fell to 72. On the 11th it was 100 in the morning, and 72 again in the evening. From the 12th to the 19th it varied from 88 to 76, usually being slower in the evenings. So far the case had appeared to be doing well, the patient having been free from fever for nearly two months, and the only bad sign was that the sinus, which appeared to be all that remained of the abscess, showed no signs of filling up. On 20th August a longer drainage tube, six inches long, was inserted, after scraping the walls of the sinus with the spoon end of a director. At 5 P.M. his temperature was 101·6, and at 9-30 P.M. it rose to 105·2, but after five grains of phenacetin, fell again to 101·6 by 11-30 P.M. Next morning it was 100·6, by 10-30 A.M. it rose to 105·8; after five grains of phenacetin it fell to 97·8 at 1 P.M., and 96·2 at 5 P.M., the pulse also being weak and rapid, and the respiration hurried. Under stimulant mixture he recovered for the time being. On the 23rd August he was again put under chloroform, and the conjoined cartilages of the seventh rib, and the costal cartilage of the sixth rib, were cut through. It was found that, while the large lower abscess cavity had contracted to a mere sinus, the small upper cavity was still in existence, and was about $1\frac{1}{2}$ inches in diameter. The finger penetrated into this cavity to just behind the nipple, between the fourth and fifth ribs. He never rallied after the operation; for the next three days his pulse varied from 144 to 152, and his respiration from 48 to 52. He died of exhaustion at 7-30 A.M. on 27th August.

A *post-mortem* examination was made two hours after death. The liver was cirrhosed, not enlarged now. It contained no other abscess cavity, but near the upper anterior border was a hard yellow patch, half an inch in diameter. The abscess cavity was contracting; it was now about one inch in diameter. The heart was small and contracted but was healthy. The bases of both lungs were congested.

(To be continued.)

THE
Indian Medical Gazette.
 FEBRUARY, 1900.

THE MEDICAL SERVICE OF THE
 AMERICAN ARMY.

SURGEON-GENERAL STERNBERG has favoured us with a copy of his annual report on the medical department of the United States Army for the fiscal year ending 30th June 1899. The number of medical officers in the regular army was only 192, or barely sufficient to meet the needs of the service in time of peace, when the enlisted strength of the army was only 25,000 men. In consequence of the Spanish War and its sequel, a large number of contract surgeons were employed, no less than 940 contracts having been made during the year. The army medical school was closed during the year, as the important duties imposed on medical officers by the existing war conditions made it impracticable to carry out the usual school programme. Owing to the war the strength of the hospital corps was very largely increased to a maximum strength of 6,588 ; of these 101 died of disease, 4 were killed in action, 6 died of wounds, and 150 were discharged for disability. A large number of nurses were also entertained for duty, and many nurses immune to yellow fever were sent to Santiago to the hospitals. As regards hospital supplies, the Surgeon-General writes : "It has been my endeavour that the sick and wounded of our army should be supplied with every comfort and restorative, and surgeons with every appliance that modern science would suggest for the treatment of disease and injury. Not only have supplies of all kinds allowed by the Standard Supply Table been freely used, but the individual preferences of surgeons have been indulged, where there was reason to believe that benefit to the sick would arise from so doing." As regards the health of the troops, there is satisfactory evidence contained in the report that the mortality of the year both from sickness and injury was much smaller than might have been expected under the stress of the hasty improvisation of a large volunteer force to undertake the war against Spain. The total number of deaths in the whole army (regulars and volunteers) was 6,619, of whom 496 were killed in battle, 216 killed by accident, 202 died

of wounds received in action, 2,774 died from typhoid fever, 476 from malarial fever, 359 from pneumonia, 342 from diarrhoea, and 185 from yellow fever. Since the occupation of Cuba in December 1898, the amount of sickness in the camps and garrison has been less than was anticipated, and may be expected to decline in the future still further. Measles, small-pox and cerebrospinal fever appeared at several posts, but were generally soon brought under control. At the outbreak of the war, the purity of the water supplies for the troops was a subject for serious consideration. What was desired was a sterile water—a water free from all bacterial infection. Boiling, however, proved difficult for a marching command, and many soldiers had a distaste for boiled water on account of its flatness. By a combination of an asbestos strainer and a filtering cylinder of compact infusorial earth, it was hoped to provide a means, at once portable and efficient, of rendering an infected water harmless. This combination was tried in many camps, and answered their purpose very well when intelligently used and carefully handled. Later on a board of medical officers reviewed and tested many apparatus presented by enterprising manufacturers, and in its report approved of a rapid and economical method of sterilization by the Waterhouse-Forbes "water steriliser," in which the heat given out by the boiled water is utilised in heating the entering fresh water. The boiled and aerated water is delivered from the apparatus at a temperature of only 45° F. above that of the entering water, a very satisfactory result for, unless the water is fairly cool, the soldiers simply will not drink it. The danger of the propagation of typhoid fever and other infectious diseases from infected sinks or privies was well recognised; "in fact, the sinks of the large camps were objects of solicitude before the camps were formed." "During the movements of an active campaign, when a camp site is abandoned after an occupation of a few days, well-cared-for privy pits afford a simple and satisfactory means of disposing off the excreta of a command. When, however, the camp is one of permanency, the danger from the use of this primitive system of conservancy is proportioned to the size of the command and the duration of its continuance on the same ground. With cases of typhoid dysentery or camp diarrhoea among the troops, the pits became foci of infection, which make their influence felt throughout the whole of the camp."

"I am of opinion," writes Surgeon-General Sternberg, "that to avoid disaster, and as an economical measure, money must be expended freely in the construction of regular sewers for camps." Where this is not possible, a trough system with removal by pneumatic pressure, is recommended. With regard to the food supplies to the Army in the field, concerning which so much sensational matter was written in the public press, it appears that after all there was exceedingly little ground for complaint. The only criticism made by the Medical Officers was that, for use in tropical climates, the ration provides more of the hydrocarbons than is needful, and that these articles might be, with advantage, reduced and the carbohydrates to some extent increased. The question of what is the best dietary for use in the tropics is now under the consideration of the Medical Officers serving in the Philippines, and their report will no doubt be of very great value. As to the men's clothing, the blue uniform, used at home, was universally condemned as too heavy, and the woollen undershirts as occasioning much irritation of the skin from prickly heat. As regards the headgear, it was assumed that, because the helmet used in India has not yet been given up by the British Troops, it must have some special virtue (certainly not obvious to those who have to wear it); but a longer experience with the American hat, particularly after the rainy season had set in, showed it to have advantages not possessed by other forms of headgear. Strange to say there appears to have been no complaints about the socks and boots issued to the troops.

This very interesting report concludes with the following remarks, much of which will probably be found applicable to our own Army at the close of the war in the Transvaal: "The Medical Corp of the Army, which was scarcely adequate before the war with Spain for our Army of 25,000 men, is now entirely inadequate and should be increased as soon as is practicable. Physicians and surgeons from civil life, however well qualified, professionally, are, as a rule, not prepared to assume the responsibilities of Medical Officers charged with administrative duties and the sanitary supervision of camps. The proper performance of such duties cannot be expected from a physician without military training or experience, no matter how distinguished a position he may have held in civil life... The value of the aphorism, 'in time of peace prepare for war,' has received

additional support during our recent experiences. This preparation should include a corps of trained medical officers, larger than is absolutely necessary for the army on a peace basis, and systematic instruction in military medicine and hygiene for the medical officers of the National Guards as well as for those of the regular army: also instruction of line officers in the elements of hygiene, and especially in camp sanitation."

With this quotation we must now conclude our review of this extremely interesting report.

THE DESTRUCTION OF MOSQUITOS.

DRS. A. CELLI and O. CASAGRANDI have published* an elaborate article on the various means of destroying mosquitos. Owing to the pain and discomfort caused by the bites of mosquitos, popular attempts have often been made to exterminate these pests long before the malarial theory was thought of, but they never have been regarded as of much practical importance. It is obvious that any classification of culicidal substances must be made on the basis of the stages of development of the insect. We, therefore, have substances (1) that kill the eggs; (2) that kill the larvæ; (3) that kill the larvæ and nymphæ; (4) that kill the perfect mosquito. The eggs are, by no means, easily killed by substances which kill the larvæ, but this is of less importance as even in dilute solutions many substances can destroy the young larvæ. The popular experiments made in America reduce themselves to the employment of petroleum or kerosine oil (the substance recommended as the panacea by the *British Medical Journal*). Celli's experience with this substance, however, by no means leads him to give it the first place. In making their very numerous experiments Celli and Casagrandi take as the criterion for judging the larvicidal action of any given substance, the time taken to kill the larvæ, and they consider any substance inefficacious which does not kill them within at most three days (72 hours). They experimented with 365 substances, many of which were found useless, e.g., permanganate of potash (1 in 1,000), arsenious acid (1 in 100), petroleum, ammonia, borax, sulphurous acid, &c. Among the substances which were found efficacious are saturated solution of tobacco, corrosive sublimate (1 in 1,000), saltwater, sulphate of copper, sulphate of iron, tar, milk of lime, sulphuric acid

* Translated in the *Therapeutic Gazette*.

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(1 in 1,000), saturated solution of quassia, permanganate of potash (1 in 200), and numerous aniline dyes. It will be seen that very strong solutions (at least in ordinary bactericidal strength) are required to destroy the larvæ. Imagine applying permanganate of potash, 1 in 200, to a large tank, swamp, or rice-field. Moreover, kerosine or petroleum is rapidly evaporated from the surface of the water, even after a couple of days.

Of all the substances tried, the Italian experimenters consider gallop (one of the aniline dyes) to be the best and to have the most durable larvicidal effect. The next point to consider is whether any of these substances are otherwise harmful, that is, whether they poison the water, injure or destroy fish, or in any way affect the growth of crops watered by means of irrigation. Petroleum does not kill fish, but herbivora will avoid drinking such water, and vegetation in the tank will obstruct its action; moreover, if the water is only even slightly flowing, the petroleum will need constant renewal. Another drawback also is that the cheaper forms of the oil do not spread out on the surface of the water and hence are useless. As regards the two colouring matters, gallop and green malachite, they are both soluble and diffusible in water; and the exact proportion to be used can be easily decided in practice by the depth of the colour produced in the water. On the other hand, these substances destroy all animal life in the water, including fish and tadpoles. It is not said if in this strength it would be poisonous to man. "Taking into consideration, however, the necessary larvicidal dose, practicability, and the price, all the mineral and many of the organic substances experimented with must be excluded, and there remain only the vegetable powders (powdered chrysanthemum), petroleum, and the aniline dyes."

The problem of the extermination of mosquitos is therefore experimentally soluble, but practically it will only be so when economic interests strongly desire it. It is, no doubt, possible to destroy the mosquitos which inhabit special tanks, ponds, &c., in the neighbourhood of public institutions such as schools, barracks, hospitals, jails, &c., or even to some extent those in villages or town areas, and it is in this direction we would recommend efforts being in the first instance directed. It is obvious, how-

ever, that as long as the malarial species of mosquito inhabits large areas of water like rice-fields, &c., it will be next to impossible to effect much of the desired result. In the meantime, as our columns show, the attempt is being made in many parts of India,—in Calcutta, Madras, Bangalore, Peshawar, Hooghly and many other places. These experiments will be watched with interest by all, and we shall welcome contributions from medical men on the subject.

LONDON LETTER.

ORGANIZATIONS FOR RESEARCH.

THE Tata and Iveagh gifts have stimulated a description of co-operative effort which constitutes a significant sign of the trend of modern thought and culture. How strange would the formula—a university for research or a research university—have sounded at the commencement of the present century. Towards its close the expression does not excite surprise, nay, it commands approval. The era during which culture implied a study of dead languages and abstract principles—so-called pure sciences—and in which a knowledge of Latin, Greek, mathematics, logic, metaphysics and philosophy was held to be the main, if not the sole, object, and business of a university is being succeeded by an era, whose dawn is changing into day, in which it is recognised that the study of material objects and events—of nature in short—is the most worthy and useful and productive exercise of the mental faculties. The old universities have not succeeded in throwing off till recently the mantle of antiquity; but they are actively adapting themselves to the times by organising faculties of science and introducing technical education—in agriculture and engineering for example. Medicine was the first and for a long time remained the only representative of this departure; but it is evidently not to retain that position in the more progressive seats of learning. The more conservative institutions—Oxford for instance—still conceive that language and philosophy are the proper subject-matter of a superior education, and that the professions of divinity and law towards which they point and lead are the proper sphere of exercise for the higher faculties and more exalted intelligences. These notions are destined to be eclipsed in the near future by the growing conviction that realistic pursuits are superior to idealistic. On these grounds such

organisations as the Royal Society and Jenner Institute in this country, and the proposed Tata University in India, are entitled to special and strong commendation and support. The two first are achieving splendid results in the direction of physical and medical research, and the proposed new Research University in India, which, I am glad to see the Government has taken up seriously, could not be laid upon better lines.

WHY NOT A VETERINARY FACULTY?

Comparative pathology has taken such a high position in relation to the study of human diseases and their causes that the time has arrived when it ought to become part and parcel of a medical education. Disorders and injuries of the lower animal creation have hitherto been studied from a very low standpoint, namely, from the point of view of the value of stock and the loss of money and impairment of usefulness which sickness and maiming occasion. Our experience of plague has compelled us to pay close attention to the rat as a sharer in infection and agent of dissemination of that disease; the incidents of rabic disease have established a very close link between man and the dog and rabbit; and bacteriological investigations have revealed affinities between human and animal affections and infections which are not only of high scientific interest, but in many respects are of great practical moment in relation to prevention and cure. Comparative pathology has forced itself into general pathology as an integral and important part of the subject, and as such it is being taught in universities and medical schools. Why should the applied science and art which takes systematic account of the maladies of the lower animal creation and their prevention and treatment be excluded from a scheme or system of universal education and relegated to a separate and inferior corporation? I think the time has come when veterinary education should be placed on a higher and better footing and should take its place beside medical education as a branch of scientific and technical university teaching.

AN INTERNATIONAL CONGRESS ON TUBERCULOSIS.

A proposal has emanated from the "National Association for the Prevention of Consumption and other forms of Tuberculosis" that an International Congress should assemble in London in the spring of 1900 under the presidency of

H. R. H. the Prince of Wales, and an influential meeting is to be held on the 18th of this month for the purpose of making arrangements for the same. The subject is one which cannot be too prominently or frequently be held before the eyes of the medical profession and the public. An interesting and prolonged discussion is now taking place at the Royal Medical and Chirurgical Society on the open air treatment of tuberculosis. The proposed Congress will constitute a goal towards which thought and effort will be directed during the interval which will elapse between the present time and the period of its assembly, and the discussions which will take place will no doubt represent a large body of observation, research and experience of the most advanced and matured kind, and the conclusions arrived at will constitute a point of departure for renewed investigation and energy. The Berlin Congress fulfilled an excellent purpose in focusing existing knowledge, and the London Congress ought to exhibit a very substantial addition to the large and interesting mass of information presented at the former gathering.

TUBERCULOSIS IN INDIA.

Dr. A. Crombie, who attended the Berlin Congress as a delegate for India, has drawn up a very excellent report on the proceedings of the assembly and compiled some useful notes on the prevalence of tuberculous disease in India. These latter are summarised in an article published in the issue of the *British Medical Journal* for October 28th (pp. 12-13) to which I would direct special attention. Tuberculosis is one of the most striking and practically important illustrations of that intimate association of human and comparative pathology to which I have already alluded.

THE WAR IN SOUTH AFRICA.

The tidings which have reached this country indicate that the arrangements which have been made for the treatment of the sick and wounded are working well and leave nothing to be desired. The Army Medical Department has risen to the occasion, and so far as can be judged, acquitted itself with commendable despatch and thoroughness. No considerable amount of sickness appears to have occurred among our troops, though the Boers, whose medical and sanitary arrangements seem to be of very rudimentary and defective kind, are said to be suffering from dysentery and scurvy. Enteric fever is known to be

very rife in South Africa, and the effect of the anti-typhoid inoculations which some 70 per cent. of our soldiers have undergone, will be watched with eager interest. As the fact of inoculation has been noted on each man's medical history sheet, which will also display all his admissions into hospital and their cause, reliable statistics on the protective power of these proceedings should be forthcoming. At present the figures which have been collected, though on the whole favourable, are by no means decisive.

THE ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION.

The arrangements for the Ipswich meeting of the British Medical Association in August are being made and published. The locality is at that time of year a charming one as regards scenery and air, and the town and its neighbourhood abound in sights of beauty and interest. I hope that many officers on leave from India will find their way to the meeting and assist by their presence and work in contributing to the success of the section of tropical diseases. A new section for the Navy, Army and Ambulance has been organised which, in view of past discussions and passing events, ought to be a strong one.

7th December 1899.

K. McL.

Current Topics.

THE NEW YEARS HONOURS.

THE list of honours published on New Year's day is a small one, but we are glad to see that the Medical Department has got a share. Lieutenant-Colonel James Sutherland Wilkins, I.M.S., and Captain Norman R. J. Rainier, I.M.S., have been appointed Honorary Associates of the Order of St. John of Jerusalem, for services rendered in connection with the epidemic of plague in India. Also the following nurses are appointed as honorary serving sisters:—Sister Gladys, Miss Laura Green, Miss Minnie Harvey, Miss Penelope Leslie, and Miss E. E. Hill.

Lieutenant-Colonel Wilkins belongs to the Bombay Branch of the I. M. S. He has also a D. S. O., gained in Burma in 1887. He is a M. R. C. S. of 1874, and entered the service in March 1874. Captain N. R. J. Rainier has been on plague duty at Palanpur. He entered the service in 1896, and is also a M. R. C. S. of 1893. He was educated at Charing Cross Hospital.

THE INDIAN ADDENDUM TO THE BRITISH PHARMACOPÆIA.

IN April last we gave an account of the proposed additions to the new edition of the British Pharmacopœia. We then pointed out that it was the intention of the Pharmacopœia Committee of the General Medical Council to make the book an Imperial Pharmacopœia for the whole British Empire by including in it, and thus giving the weight of its authority to the many valuable drugs indigenous to the various parts of the Empire. The medical and pharmaceutical authorities within the seventy areas which comprise India and the British Colonies were invited to aid and did aid in the compilation of the book. Fifteen areas of administration in India sent in replies and suggestions as well as all other British dependencies and colonies.

The interests of the provinces of India, in relation to the imperialisation of the British Pharmacopœia, were centered in a special committee appointed by the Government of India in 1894. The Committee consisted of Surgeon-General R. Harvey (then Inspector-General of Civil Hospitals in Bengal); the Medical Store-keeper to Government, Calcutta; and the Senior Medical Officer, British Troops, Calcutta. These officers assembled in Calcutta and drew up two reports which furnished important contributions to the Pharmacopœia of 1898. The Principal of the Madras Medical College also sent to the Calcutta Committee another valuable report. The officers who, at the instance of the Madras College Council, drew this third report were Major F. J. Crawford, Professor of Materia Medica in the College; Mr. Hollingworth, Lecturer on Botany; and Lieutenant-Colonel St. C. Carruthers, the latter a highly skilled enthusiast in all matters pertaining to the treatment of drugs and the production of efficient pharmaceutical preparations. There is also an "Indigenous Drugs Committee" in Madras which is investigating the medicinal virtues of Picorrhaza Kurson, Adhatoda Vasica, Alstonia Scholaris. Moreover Dr. George Watt, C.I.E., as Secretary of the Indigenous Drugs Committee, is forwarding to the Medical Council a letter showing the course they are adopting to secure much-needed chemical, physiological and therapeutical investigation of Indian indigenous drugs. Surgeon-General Bidie (ret'd.) has contributed a long report including notes on each of the Indian drugs in the Addendum and also on Thevetia Neriifolia, and Ipomoea Hederacea. Mr. David Hooper, Mr. D. Kemp, and Dr. E. M. DeSouza are also co-operating with the Committee. In the same way it is gratifying to see the way in which all the colonies of the Empire are helping on this work, in fact to quote from the pamphlet before us "It will be seen that fifty-three of the seventy British Administra-

tions of India and the Colonies have already communicated to the Medical Council their views respecting an Indian and Colonial Addendum to the British Pharmacopœia, and so far, without exception, concur in supporting the broad principles of imperialisation of the great national book of medicines; while every one of the seven important classes of Colonies or Provinces which form the British Empire beyond the boundaries of the United Kingdom, heartily joins with England, Scotland and Ireland in doing all that can be done from time to time to promote the ultimate production of an IMPERIAL BRITISH PHARMACOPŒIA."

LORD LISTER ON PROFESSOR HAFFKINE'S WORK.

AT the anniversary meeting of the Royal Society, held in Burlington House on St. Andrew's day, Lord Lister gave a most appreciative account of Professor Haffkine's work on preventive inoculation against both plague and cholera. Lord Lister remarked that Professor Haffkine went out to India six and a-half-years ago, with the object of testing there a method which he had recently elaborated. Applying Pasteur's principles of the *attenuation et renforcement des virus*, he had succeeded in obtaining the microbe of cholera in two very different degrees of intensity; one so virulent as to produce, when introduced in small quantity beneath the human skin, the most violent inflammatory disturbance and even mortification at the seat of inoculation; the other so mild as to cause extremely slight reaction or inconvenience. "And he had ascertained by experiments on himself and some scientific friends, that if a little of the milder form of the organism was injected hypodermically and followed a few days later by a similar dose of the more potent variety, it might be at a place remote from the site of the first operation, the whole human system had, in the interval, undergone such a change that the second potent injection was unable to produce more effect on the original mild one. This was a perfectly definite and truly astounding fact; but there were many who doubted whether it would prove applicable for the prevention of cholera. . . . Haffkine however felt confidence in his method and resolved to give it a trial in India, where the dreadful disease is in some districts awfully prevalent, and he pursued his object, in spite of well nigh insurmountable difficulties. How fully his efforts were crowned with success was evident from the striking statistics which he brought before them. It appeared to be established that the cholera bacillus invariably attacked the mucous membrane of the intestinal canal. And if it be admitted that this was always the primary site of its invasion, they would well understand that the anti-infective inoculation, by protecting the mucous membrane

against the invasion of the microbe, might prevent it from ever developing in the body and from ever producing its deadly toxin. These considerations enabled them to understand Haffkine's position with reference to plague. The plague bacillus like that of cholera can be cultivated apart from the animal body in an artificial medium. . . . Living plague could, of course, not be injected; but it was a happy circumstance that their life was not essential to their efficacy for producing anti-infective immunity. Taking altogether, the evidence tended to the conclusion that this system of preventive inoculation was, under proper management, capable of reducing the mortality in a plague-stricken district by between 80 and 90 per cent." At the close of his address Haffkine referred with confident hope to typhoid fever. Considering the close analogy that existed between that disease and cholera, he early predicted that the protective method which had proved so successful with the one would answer for the other. His suggestion had recently been acted upon by Professor Wright of Netley, who had developed, with great zeal and ability, a method of procedure which appeared full of promise. As a member of the Plague Commission, he had large opportunities for applying it in India, and although sufficient time had not yet elapsed for testing fully its protective efficacy, he had clearly established its freedom from any immediate injurious consequences. Meantime some earlier trials, though on a limited scale, had proved so satisfactory, that the British Army authorities had seen their way to recommending the system to soldiers going out to South Africa, where the disease was grievously prevalent, and we might fairly anticipate that many a gallant life would thus be preserved. How long the protection caused by these protective inoculations would last was at present somewhat uncertain. It would no doubt differ in the different diseases. In the case of cholera, it appeared from Haffkine's results that it continued for upwards of a year. In plague, so far as could be judged hitherto, it would seem to last about a twelve month. With typhoid there were at present no materials for forming an estimate.

At the conclusion of the meeting the officers and Council for the ensuing year were elected; Lord Lister being again elected President.

LARVÆ OF FLIES AS HUMAN INTESTINAL PARASITES.

IN recent issues of the *Gazette* cases were published by Major J. Smyth and by Major F. P. Maynard, I.M.S., of the larvæ of flies being found in the human intestine. In the *Transactions of the South Indian Branch of the British Medical Association*, we find another case reported by Major W. B. Browning, I.M.S. The symptoms of the patient were loss of weight,

flatulence, &c. The larvæ were examined by Dr. Henderson, the Professor of Biology at the Christian College, Madras, who reported as follows:—"Larvae, whitish, without head or limbs, maximum breadth 0·75 millimetres, body composed of twelve segments, indicated by 11" cross-bands of very numerous short closely set setæ. The bands were all transverse except the last one, which is arched forward on the ventral surface and they cause slight projections along the sides of the body." "Anterior or oral end slightly less than half the width of the widest part of the body, posterior end considerably wider than the anterior. Mouth terminal with a small projecting tubercle on either side. Two black chitinous jaws, of considerable size and slightly curved anteriorly, project into the mouth, and are continued backwards into a pouch which ends immediately in front of the third band of the setæ; the jaws are evidently retractile in this pouch. At the posterior end of the body the dorsal margin exhibits a median rounded lobe with a small nipple-like projection on either side. The anus is a wide transverse opening on the ventral surface of the last segment, surrounded by a fringe of rather long hair-like setæ."

Dr. Henderson said that the specimen appeared to be allied to the *Distrus Gastrophitus*. It may be noted that the patient had been eating mangoes, the residue of which formed the bulk of the washings of his motions.

ESTHIOMENE OR GRANULOMA.

THE clinical characters of this form of granuloma have been so recently described in these columns by Lieutenant-Colonel Maitland that it is unnecessary to repeat them, but a very interesting discussion on the affection took place at a recent meeting of the South Indian Branch of the British Medical Association. The subject was introduced by Colonel Branfoot, I.M.S., who drew attention to the subject in the hope that more observers in this country may be induced to study the conditions and enable us to clear away misleading nomenclature beyond all doubt. "This affection," said Colonel Branfoot, "appears to be much more commonly met with in tropical latitudes than elsewhere, therefore it is from the profession in the tropics that light should be shed upon it." The disease called "esthiomene" or literally "eating" was described by M. Huguenin as far back as 1849, and this term has been adopted by most French writers. Colonel Branfoot considers that what Mathews Duncan described as "hypertrophy of lupus" is identical with this disease, a view which is not accepted by Dr. Maitland. In our last issue Mr. Arthur Powell entered a protest against the terms "ulcerating" and "cicatrising" which have been given to the affection, and proposed the term *sclerotising* as more in accordance with its true pathology. It is desirable to know to what extent this granu-

loma is prevalent in India. It is certainly common in Madras. Kenneth Macleod many years ago described what is now recognised to be the same disease in Calcutta; Mr. Powell has met with it in Assam, and it is probable that this is the same disease as was described in 1894 by Major J. A. Cunningham, I.M.S., as seen in the people of the Simla hills, but to what extent it is to be found in other parts of India is not yet known, and we would welcome communications on the subject.

THE GERMAN ARCHIVES OF NAVAL AND TROPICAL HYGIENE.

THE November-December number of our contemporary contains many articles of interest, besides giving resumés of four articles from recent numbers of this *Gazette*. In a long article Dr. Frederick Plehn returns to the subject of blackwater fever, and discusses its comparative rarity in India. There is also quoted an article by Yersin on the plague in French Annam, where at Nhatrang, the French Government have established a special laboratory for the study of plague. Yersin remarks that rats have been found in small numbers in the Annam epidemic, and they do not appear to be the principle vehicles of contagion. The disease appears to have been spread by means of fleas (*les puces*). He believes that on the evacuation of infected houses the fleas remain for some time, till finding the usual means of nourishment wanting they desert the house and flock to others bearing the contagion with them, he therefore advocates the destruction of infected houses by fire. Yersin also believes that the people of Annam are less immune to plague than even Chinese and Hindoos. Out of seventy-two cases thirty were not treated by European medical men and all died, out of thirty-three cases treated by Yersin's own serum the mortality was only 42 per cent. In another article quoted Dr. Vincent insists upon the great fatality of tuberculosis in the French Navy and on the facilities afforded by life on boardship for the spread of the disease. One-fourth of all deaths in the French Marine are from tuberculosis. In the Marine Hospital at Brest out of 1,119 deaths from all causes no less than 501 (or 46 per cent.) were from tuberculosis; whereas in the Army the death-rate from the same disease is only 17 per cent. The engineers and stokers furnish most of the cases.

Dr. Le Jollec (*Annales de Hygiène*) gives a short account of the sickness and mortality in the French Penal Settlement at Guyane in 1897. Among the free inhabitants, garrison and officials, the daily strength was 1,195, and the sick-rate 522 per mille. Among the convicts, the number being 5,961, the sick-rate was 866 per mille and the death-rate 58 per mille. The malarial fevers account for most of this

sickness and "malarial cachexia reigns over most of the convicts." Dysentery and hepatic affections are both rare in Guyane, but malarial cachectics are very liable to a form of chronic diarrhoea, which ushers in and hastens the death. Elephantiasis is common among the natives, as also is leprosy. In the *Revue de Medecine* Dr. Leques calls attention to a form of pulmonary lesion, which he has found very common among malarial cachectics. He calls it "pneumo-paludisme." It is possible that it is the same symptom which is often met in India and usually called "oedema of the lungs" which often carries off malarial cachectic patients in a few hours.

KOCH'S METHOD OF GETTING RID OF MALARIA.

PROFESSOR KOCH has described (*Deut. Medicin. Wocher*, September 14th) the method he proposes for the extermination of malaria. Just as it is theoretically possible to exterminate cholera by destroying all the infected stools of patients, so the malarial parasite is to be attacked in the blood of man. Koch says that he is convinced "that malaria can be exterminated in time by destroying all the parasites in subjects infected with malaria during the summer before the arrival of the next fever season," so that when the hungry mosquito arrives next season it may suck human blood, but finding no parasite it cannot convey the disease. How then are we to get so thoroughly rid of the parasite from our blood? "this can be accomplished by quinine, but not in the half-hearted way it is usually administered." Koch gives thirty grains in two doses during the intermission, and follows up with fifteen grains every ten days during the fever season to prevent relapses. In severe cases of the aestivo-autumnal type the doses should be doubled.

LUMBAR PUNCTURE IN MENINGITIS.

WE have received more than one inquiry as to the method of performing the little operation known as "lumbar puncture." It is not difficult to do, though success may not attend the first attempt. The following is the method described by Wentworth in Mallory and Wright's "Pathological Technique." After the usual antiseptic precautions "the patient should lie on the right side with the knees drawn up, and with the uppermost shoulder so depressed as to present the spinal column to the operator. An antitoxin needle (or a fine aspirator needle), 4 cm. in length, is well adapted for children; a longer one for adults. The puncture is generally made between the third and fourth lumbar vertebrae. The thumb of the left hand is pressed between the spinous processes, and the point of the needle is entered about 1 cm. to the right of the median line, and on a level with the thumb nail and

directed slightly upwards and inwards toward the median line. Care must be exercised to prevent the point of the needle from passing to the left and striking the bone. At a depth of 3 or 4 cm. in children and 7 or 8 cm. in adults the needle enters the subarachnoid space and the fluid flows usually drop by drop. The smallest drop of blood obscures the macroscopic appearance of the fluid by rendering it cloudy. The fluid is allowed to drop into an absolutely clean test-tube, which previously has been sterilised by dry heat to 150°c. and stoppered with cotton. The fluid should be allowed to drop into the tube without running down the sides. From 5 to 15 cubic centimetres of fluid is a sufficient quantity for examination."

THE RESULTS OF TREATMENT.

IN his interesting volume, reviewed in another column, Dr. J. Mitchell Bruce writes as follows on the caution which must be exercised in referring changes that occur in the progress of a case to the treatment employed:—"There is a strong disposition on the part of the patient and his friends to attribute every change, whether improvement or the reverse, to the medicinal remedies that have been administered. Nor is the practitioner himself by any means unprejudiced. As a rule, he is ready to credit his treatment with whatever improvement may occur. *Post hoc sed non propter hoc* is a hackneyed aphorism in treatment, but one which is often disregarded. Popular faith in drugs is still unreasonably strong; but the modern practitioner ought to have no difficulty in disabusing his own mind, if not the minds of his patients, of erroneous conclusions in this direction. It is unnecessary to repeat that many of the cures on which practitioners once prided themselves were spontaneous, that is, occurred quite independently of treatment, possibly in spite of it. Even when we deserve credit for a successful result, it is by no means always the particular measure which we esteem so highly that has brought relief . . . In many cases we never reach the disease itself with our medicinal remedies; we only remove the supervening cause, such as exertion or privation, or alcoholism, which is accountable for the urgent symptoms. Still if the progress of a case be unfavourable, we must be prepared to inquire how far our line of treatment is responsible for the result. Treatment by drugs is sometimes blamed undeservedly, but in many instances the charge is well founded. . . There is danger in blindness to the harmful effects of treatment, particularly of treatment by drugs. Opium is a drug much abused in this way. We are satisfied with the relief which it affords from pain, cough, or insomnia; we blind ourselves to the unpleasant fact that this result has been purchased at the cost of deranged

digestion, arrest of hepatic and intestinal action, cessation of useful expectoration, and other evils immediate and remote, possibly even the morphine habit."

THE TWO CYCLES OF THE MALARIAL PARASITE.

As the zoological terms used by Ross, Celli and others in describing the intra and extra-corporeal cycles of the malarial parasites are not yet fully explained in the text-books, it may be well to quote from Manson's most recent description, as given in the appendix to the concluding volume of Allbutt's "System of Medicine." The youngest parasites occur as amæbulæ or myxopods within the red-blood corpuscles of vertebrates. They increase in size, acquire pigment, and, at the end of a definite time, become either (a) sporocysts, or (b) gametocytes.

(a) The sporocysts, when mature, divide into spores which escape into the liquor sanguinis, invade fresh blood corpuscles, and repeat the cycle. In this way the parasite is propagated indefinitely in the vertebrate host.

(b) The gametocytes, which in some species assume a crescentic form, while in other species they resemble the mature sporocysts, continue to circulate for a time (as yet undetermined) in the blood of the vertebrate, or until transferred to the stomach of particular species of mosquito. On being so transferred they escape from the enclosing red-blood corpuscle, and can be recognised as being of two kinds—hyaline and granular. The hyaline, or male, gametocyte emits a number of microgametes (flagella) which, on becoming free in the blood plasma, seek out the granular or female gametocyte. The female gametocyte consisting of a single macrogamete is then fertilised by the entrance into it of a microgamete. A zygote is the result. The zygote acquires locomotory and penetrating properties in virtue of which it transfers itself to the interstices of the muscular layer of the middle intestine of the mosquito. It now grows rapidly, acquires a capsule, and ultimately projects into the body cavity of the insect. During this rapid growth nucleus and protoplasm divide into a number of zygotomeres, which become blastophores, each bearing on its surface, attached by one end, a large number of zygotoblasts or sporozoites. Finally, the blastophores disappear, the capsule of the zygote ruptures and the zygotoblasts are poured into the cavity of the mosquito. They are then taken up by the blood of the insect, ultimately becoming lodged in the cells and ducts of the veneno-salivary glands, whence they are emitted into the blood of a vertebrate when the mosquito next proceeds to haustellation. In this way an extra-corporeal cycle of the parasite is completed; and in this way the parasite may be transferred from one vertebrate to another of the same, or possibly, of a different species.

MAUSER BULLET WOUNDS.

SIR WILLIAM MACCORMAC in the *Lancet* (December 23rd) gives a very interesting account of the medical arrangements for the war in Cape Colony. We extract the following description of Mauser bullet wounds:—"They are remarkable for the small external wounds they produce. In three-fourths, if not in a larger proportion, it was impossible to tell the exit from the entrance wound, they were so similar in appearance. Some were quite healed, but most were slits covered with an adherent black scab slightly depressed and saucer-like. Doubtless some contraction had taken place in healing, but they were quite circular and much smaller than the end of a lead-pencil Probably most of these injuries were inflicted at a range of a thousand yards. . . . one man, a Gordon Highlander, had his elbow smashed up into small pieces. He believed it was an explosive bullet, but it may have been a Mauser at short range. The Boers, however, use other weapons. A Martini-Henry bullet was removed from the ball of a man's thumb—an almost solitary example of a lodged bullet. They also fire hollow bullets which would have explosive effects In the wards I noticed quite a number of perforating chest wounds, and some remarkable perforations of bone without any solution of continuity or complete fracture,—in one instance, there was a perforation of the shaft of the tibia at the junction of the upper with the middle third of the bone, an injury which my previous experience would pronounce quite impossible I saw four abdominal injuries, in one the bullet entered the buttock and emerged in front a little below the ribs, in another the abdomen was traversed in a similar direction. There were haematemesis and bloody stools for three days without any further symptoms. In another the bullet traversed the abdomen from front to back, and there were no symptoms of any kind In conclusion, I would say that in my opinion it would be difficult, if not impossible, to procure better treatment in any hospital than the patients in Wynberg Base Hospital are receiving, under climatic and sanitary conditions extremely favourable in every respect for a successful issue."

WATER AND SEWAGE EXAMINATION RESULTS.

Report of the British Association appointed to establish a Uniform System of recording the Results of the Chemical and Bacterial Examination of Water and Sewage.

THE Committee beg to report as follows:—

- That it is desirable that results of analysis should be expressed in parts per 100,000, except in the case of dissolved gases, when these should be stated as cubic centimetres of gas at

0° cent. and 760 mm. in 1 litre of water. This method of recording results is in accordance with that suggested by the Committee appointed in 1887 to confer with the Committee of the American Association for the Advancement of Science, with a view to forming a uniform system of recording the results of water analysis.

2. The Committee suggest that in the case of all nitrogen compounds the results be expressed as parts of nitrogen over 100,000, including the ammonia expelled on boiling with alkaline permanganate, which should be termed albuminoid nitrogen. The nitrogen will, therefore, be returned as:

- (1) Ammoniacal nitrogen from free and saline ammonia.
- (2) Nitrous nitrogen from nitrites.
- (3) Nitric nitrogen from nitrates.
- (4) Organic nitrogen—either by Kjeldahl or by combustion, but the process used should be stated.
- (5) Albuminoid nitrogen.

The total nitrogen of all kinds will be the sum of the first four determinations.

The Committee are of opinion that the percentage of nitrogen oxidized, that is, the ratio of (2) and (3) to (1) and (4), gives sometimes a useful measure of the stage of purification of a particular sample. The purification effected by a process will be measured by the amount of oxidized nitrogen as compared with the total amount of nitrogen existing in the crude sewage.

In raw sewage and in effluents containing suspended matter it is also desirable to determine how much of the organic nitrogen is present in the suspended matter.

In sampling, the Committee suggest that the bottles should be filled nearly completely with the liquid, only a small air-bubble being allowed to remain in the neck of the bottle. The time at which a sample is drawn, as well as the time at which its analysis is begun, should be noted. An effluent should be drawn to correspond as nearly as possible with the original sewage, and both it and the sewage should be taken in quantities proportional to the rate of flow when that varies, e.g., in the emptying of a filter-bed.

In order to avoid the multiplication of analyses the attendant at a sewage works (or any other person who draws the samples) might be provided with sets of twelve or twenty-four stoppered $\frac{1}{4}$ Winchester bottles, one of which should be filled every hour or every two hours, and on the label of each bottle the rate of flow at the time should be written. When the bottles reach the laboratory, quantities would be taken from each proportional to these rates of flow and mixed together, by which means a fair average sample for the twenty-four hours would be obtained.

The Committee at present are unable to suggest a method of reporting bacterial results, including incubator tests, which is likely to be acceptable to all workers.

PROPOSED INTERNATIONAL CONGRESS ON MALARIA.

THE Liverpool School of Tropical Medicine, under the energetic guidance of Major Ross, L.M.S., is preparing to embark on a new enterprise. The authorities of the school are now making arrangements to hold an International Congress on the subject of Malaria. The researches of Major Ross and his colleagues in Sierra Leone have attracted universal attention, not only in India and the British Empire generally, but also on the continent, therefore it is felt that the time has already arrived when an international exchange of opinion would be of advantage. We understand that the project has already received a very favourable reception, and it is to be hoped that not only will India have an official representative at the Congress, but that many medical officers in India will contribute papers and take an active part in the proceedings. The now much-debated subject of the extermination of malaria will occupy a prominent part on the programme, and, as our columns testify, this subject is now engaging very general attention in all parts of India. In the meantime the work so well begun by Ross in West Africa is being continued, and Dr. Christopher accompanied by Dr. Stephens and Mr. A. Pichels, who have been selected by the Royal Society, have sailed for the West Coast to continue the study of the question.

FOREIGN VIEWS OF INDIAN PLAGUE MEASURES.

It is satisfactory to see that the measures taken in India for the checking of the plague, if not always understood nor appreciated by the inhabitants of this country, are certainly approved of in other countries.

The Superior Sanitary Commission of Constantinople writes thus of the decision to allow pilgrims for Mecca only to embark at Chittagong:—"The Superior Sanitary Council has decided to express its thanks to the Anglo-Indian Government for preventing by the said decision the spread of plague."

The American Consul at Bombay writes thus to the Government at Washington: "At first the people failed utterly to understand the use of segregation. To the masses infection and contagion conveyed no meaning. Nothing but the splendid confidence of the people in the British Government could have made sanitary measures possible, in the broadcast and rapid manner it became necessary to use them among untrained and uneducated millions."

THE Medical Circulating Library for use of medical officers serving in Bengal (for which they are indebted to the energy of Colonel T. H. Hendley, C.I.E., I.M.S.) will soon be in working order. The catalogue is being printed. Already it contains a large number of valuable medical works. We hope to give a further account of it in next issue.

JUST at present the trend of medical opinion is towards finding out intermediary hosts for the pathogenic organisms which afflict us. The rat and the mosquito have much to answer for, and now an American writer, Dr. G. Law (*New York Medical Journal*, October), makes an ingenious suggestion that frogs and toads may act as the intermediary hosts for the bacillus of Eberth. He points out that frogs and toads eat flies, that flies can take up on their legs and wings the typhoid germ, hence "a study of the intestinal contents of the toad might reveal important facts in the life history of Eberth's bacillus."

IN a recent lecture before the *New York Medical Association* Osler said as follows:—"Learn to suspect typhoid fever, and not malarial fever in every case of pyrexia which lasts six or seven days, particularly if it resists the action of quinine. For too long you have employed the Anglo-Saxon method of procedure, and in a given case have assumed innocence of anything so serious as typhoid until the onset of some serious symptom showed clearly what was guilty. It is high time now that you adopt the Gallic usage, and regard every case of continuous fever as guilty, *that is, as typhoid*, until the contrary be clearly demonstrated."

OWING to the continued prevalence of the plague at Mauritius, the Governor of that island recently prohibited a race meeting at Port Louis. This caused considerable excitement in the community, and the Mauritius Turf Club has laid claim to an indemnity and states that it has sustained heavy losses by the action of Government.

IT is said that rats chiefly leave a ship moored to a wharf by walking across the cables attaching the ship to the land. To prevent this the Russian authorities at Odessa have devised the following method:—The cable is run through an iron pipe about a foot in length, welded on to this is a wide flange or funnel, looking like the end of a trumpet, the wide end facing the ship. This prevents the rats from going further along the rope. This device is considered so useful that the Russian Government has ordered its use by all ships from infected ports. Could not the rats, however, if they fell into water swim ashore?

WE are informed that Major G. M. Giles, F.R.C.S., I.M.S., is engaged on the preparation of a work on the mosquito, dealing with its numerous species and varieties. The volume is now in the hands of the publishers. There can be no doubt of the necessity for such a work. The mosquito-malarial theory has shown how little is generally known of the habits and distribution of the mosquito. Such a work could not be in better hands than those of Major Giles, I.M.S.

WE understand that Dr. D. F. Keegan, I.M.S. (*retd.*), is publishing a little volume on Rhinoplastic Operations, with numerous illustrations. It will be brought out by Messrs. Baillière Tindall and Cox; the price will only be 5s.

Reviews.

The Principles of Treatment—By J. MITCHELL BRUCE, M.A., M.D., F.R.C.P. YOUNG J. PENTLAND, Edinburgh and London, 1899.

THE name of Dr. Mitchell Bruce on the title page of a book on treatment is enough to make sure that the volume is worth reading, and the reader who buys this book with this expectation will certainly not be disappointed. "In the course," writes Dr. Bruce, "of a long and intimate association with students of practical medicine, I have come to realise more and more fully the immense difficulties which they feel, when they are called upon to show an intelligible acquaintance with treatment. They may write a prescription with little hesitation, but as a rule they cannot give a rational account of the principles on which they have planned it; they fail to do justice to the immense amount of sound knowledge which they have laboriously acquired, and too often they resign themselves to the observance of some routine system of treatment which they have read up; for, however unwilling we may be to confess it, simple authority is still very largely the guide in medical practice. The present work starts by assuming no therapeutic laws, but proceeds to find them in the familiar facts of ætiology, pathological anatomy, and the clinical characters of disease. These are carefully examined for the elementary principles of treatment; and in the course of the enquiry the student is taught how he may himself employ his observations as guides to practice."

The volume is divided into two parts, the first dealing with principles, and the second with illustrations of these principles. Thus, we find chapters on the principles of treatment founded on ætiology, on pathology, on the clinical characters of disease, and an excellent chapter on the "personal factor in disease." After this comes one on the need of interference and the justification of

treatment. The means and the art of treatment are also dealt with. The second part is devoted to practical illustrations of the foregoing principles, and deals with not merely the drug treatment, but with the management of cases of heart disease in all their aspects. Then follow chapters on acute and chronic Bright's disease, on gravel and calculus, on acute and chronic bronchitis and asthma, pleurisy, pneumonia, and phthisis, digestive troubles, gastric ulcer, diarrhoea (or "enteric catarrh," as our author calls it). Chapters on constipation, appendicitis, cirrhosis of the liver, cerebral haemorrhage, neuritis and typhoid fever complete the book. The book is written in a pleasant easy style, far removed from that of the ordinary text-book; the printing and general get-up of the volume is excellent, and, on the whole, it can be confidently recommended to our readers.

Mental Affections.—By JOHN MACPHERSON, M.D., F.R.C.P.E. London : The MACMILLAN Co., 1899.

THIS volume consists of lectures delivered to the students of the class of Mental Diseases in the Royal Colleges' School of Medicine in Edinburgh. It is, however, by no means merely a students' text-book on mental diseases. In fact, in our opinion, it is rather a book for the practitioner of medicine, and is pitched altogether in higher tone than an ordinary text-book on such a subject. The volume is divided into three parts, the first deals with the broad questions of morbid heredity; the evolution of and the determining causes of insanity. Part II is physiological and pathological, and the third and longer part deals the clinical symptomatology of diseases of the mind. As regards the vexed question of the transmission of acquired characters, as it affects disease, our author writes as follows: "Pathological influences acting on the germ plasm and sperm cell tend to break the continuity of physiological inheritance and to create new characteristics, which, being abnormal, are less in harmony with the environment, and consequently hamper the individual in the struggle for existence. It is not, as a rule, the special pathological characters themselves which are transmitted, but a predisposition manifested usually by a morbid affection of nutrition, a feebleness of development and certain functional incompetencies, which is capable of engendering under unfavourable influences diseases of very different appearances. This morbid hereditary deviation from the normal type, whether grave or light, is always associated with a corresponding change in some function of the nervous system; and this change in nervous function is called Degeneration." Our author also briefly discusses the interesting question of the connection between Genius and Insanity and Crime. In discussing the social causes of insanity our author alludes to the fact that insanity is very much less common among

savages than among modern civilised nations. "With a population of about six millions, Egypt has only one asylum at Cairo, which contains 600 patients. Compare this with Scotland, which has a population of less than six millions and 14,000 lunatics." We may also add that insanity is also comparatively rare in India. There are not more than a few thousand lunatics confined in all the asylums of India. As our author says: "When a savage race comes in contact with modern civilization, insanity rapidly increases. It was observed, before the abolition of slavery in America, that insanity was five times as common among the free northern negroes as among the still enslaved negroes of the South. At the present time insanity is equally common in the coloured and white races in America." We have not space to linger on the excellent chapters in this volume on the conscious mind, on hereditary degeneration, or on auto-intoxication, which will well repay perusal. The third part of the book is devoted to the consideration of clinical symptomatology and deals with idiopathic mental affections, as mania, melancholia, &c., with the confusional insanities, toxic insanities, &c. There is also an admirable account given of the insanity of the degenerate, the insanity connected with the neuroses and that caused by brain disease. The concluding chapter deals with medico-legal considerations in a few of the more common and important aspects, as, for example, the seclusion and certification of the insane, the certification of incapacity for management of business of property. The questions of the testamentary capacity of the insane and their criminal responsibility is also well discussed. We read, "What ought our position to be towards this great group of borderland cases? All artificial tests fall away in the presence of their rather subtle and obscure mental symptoms. If technical insanity cannot be established, we must plead in the face of angry justice and an unbelieving public their total irresponsibility, for a limited responsibility is both impracticable and impossible. They are not criminals, but degenerates really insane, whom it is the clear duty of a civilized state to isolate from society and place under medical treatment, but neither to punish retaliatively by committing them to jail, nor confound with the insane by placing them in lunatic asylums."

We can strongly recommend this volume to our readers.

A Manual of Surgical Treatment.—W. WATSON CHEYNE AND F. F. BURGHARD. In six parts, Part I. London : LONGMANS GREEN & Co., 1899.

THIS volume is altogether a new departure in the subject of surgery. It is essentially a book for the practitioner, who is already acquainted with the details of pathology, symptomatology and diagnosis, but who requires full

and detailed information as to the best methods of treatment. In this work details are given as to treatment from the commencement to the termination of the illness. It is assumed that the reader is familiar with the nature and diagnosis of the disease, and pathology and symptoms are only referred to in so far as it is necessary to render intelligible the principles on which treatment is based, and the various stages of the disease to which each particular method is applicable. As it would only be confusing to give a summary of all the various methods of treatment that have from time to time been proposed in this volume, only those plans are described which the authors' experience have led them to believe are the best.

The present volume (which is only Part I), is to a large extent introductory, and deals with Inflammation, Suppuration, Ulceration and Gangrene. A resumé of Chapter III will perhaps give our readers some idea of the scope and nature of the book. It begins with the definition, classification and causes of ulceration; next is described the numerous varieties of ulcers, *viz.*, simple, inflamed, irritable, weak, phagedenic, varicose, callous, pressure, diabetic, &c. After pointing out the dangers of ulcers, some twenty pages are devoted to the treatment of ulcers in general, and of the special varieties mentioned above. Reverdin's and Thiersch's methods of skin grafting are fully described, the preference being given to the latter method, in which the whole thickness of the skin is used. Another very valuable chapter is by Dr. J. F. Silk. It is on anaesthetics, and gives full instructions as to the preparation of the patient, the choice of the anaesthetic, and the various substances used for this purpose.

We note that the writer does not advocate the routine use of morphine immediately before the inhalation. He considers the advantages more theoretical than practical; in the same way he thinks the time honoured auscultation of the chest before the anaesthetic to be both valueless and misleading, and it increases the trepidation of the patient. The question of the choice of the anaesthetic is very clearly and fairly discussed, the factors determining the choice are stated to be—(1) The duration of the operation; (2) the position of the patient; (3) the age of the patient; (4) the condition of the patient; and (5) the nature of the operation.

Regarding the latter question, we may quote the following table:—

Operations on head and neck.—A. C. E. to induce, increasing the proportion of ether in long operations.

Intercranial Operations.—Chloroform or A. C. E. all through.

Operations on mouth.—Induce with A. C. E.; change for chloroform directly operation commences.

Operations on big joints.—Always ether if possible.

Abdominal operations.—Do well with ether, but chloroform or A. C. E. often preferred by surgeons.

Rectal and Genito-urinary operations.—Always ether if possible.

As regards the way to administer chloroform, Dr. Silk says, the simplest way is to sprinkle it drop by drop on a folded towel, or better on to a piece of domette stretched over a metal frame (Skinner's Inhaler). He strongly objects to the use of lint for this purpose. The following advice is given in italics: "*The respirations must be watched with the greatest possible vigilance.*" There are many other valuable chapters in this volume on which we have not space to linger, e.g., those on wounds, on infective diseases of wounds, on cicatrices, syphilis, tuberculosis, and tumours, but we have indicated enough to show the nature of the book, which is one which can be strongly recommended to the large body of operating surgeons in India. The volume is copiously illustrated and excellently printed.

Current Literature.

SPECIAL SENSES.

MAJOR HERBERT, I.M.S., has a paper on "**Changes in the Conjunctiva produced by Chronic Inflammation**" in the Transactions of the Ophthalmological Society of the United Kingdom, Vol. XIX, 1899, illustrated by a plate. The microscopic changes found in trachoma and follicular conjunctivitis (which the author regards as microscopically one, only differing in degree) are described minutely. He finds that, besides an increase in the number of large typical plasma cells distributed through the conjunctiva, there is a hypertrophy of existing follicles and lymph-heaps, and a new formation of these structures. Mr. Stephenson pointed out after the paper had been read, what an important observation Major Herbert had thus made, *viz.*, that the changes in trachoma begin in the lymphatic spaces or in the lymphatic vessels; and how, if the fact were confirmed, it formed an explanation not only of the local spread of trachoma from one part of the conjunctiva to another, but also of the fact that in advanced cases of trachoma there was a general enlargement of the pre-auricular glands and those of the neck, and occasionally of the femoral or inguinal or other accessible glands. Major Herbert finds retrogression or absorption of follicles occurs by various means: (1) the cells are carried away in the lymphatics; (2) others become amoeboid, and (a) travel away through the surface epithelium, or (b) pass directly through the walls of nervous radicle into the blood stream; (3) other cells break down by (a) colliquative or vacuolar and (b) hyaline degeneration. Method (2) is described as quite new, and will be discussed by the author, he says, in the *Journal of Pathology*.

The praises of **Euphtalmia as a Mydriatic** were sung by Mr. Hinshelwood of Glasgow at the annual meeting of the British Medical Association at Portsmouth, and the paper is published in the *Ophthalmic Review* for November 1899. He sums up its chief qualities as follows: (1) two or three drops of a 5% solution of euphtalmia (in water) will dilate the pupil fully in from 20 to 30 minutes; (2) this dilatation may

be considerably accelerated by the preliminary installation of a drop of a 1% solution of holocain; (3) then is produced a paresis of accommodation, variable in amount, but always very transient, passing off completely in from $\frac{1}{2}$ to 2 hours; (4) no discomfort or feeling of irritation; (5) no injection of conjunctival vessels, no tearing and no alteration of the cornea; (6) no elevation of ocular tension; (7) no toxic symptoms have ever been observed from its use; (8) the mydriasis disappears completely in from 8 to 12 hours. Its chief use is in dilating the pupil to examine the fundus or transparency of the media. For refraction atropin or homatropin is necessary to paralyse the accommodation. For retinoscopy it is of great value.

The following extracts are taken from the *Annals of Ophthalmology* for April 1899.

The best medicinal measure for **trachoma** in *Galezowski's* hands has been the mitigated stick of nitrate of silver mixed with nitrate of potassium. Failing this he resects the affected portions of the conjunctiva (*Recueil d'Ophthalm.*). He has found that three things are essential to the success of the operation, viz. (1) to excise nothing but the conjunctiva, (2) the excision should reach from angle to angle; and (3) the tarsus should not be touched.

Ibadie of Paris still champions his vaso-dilation theory regarding the etiology of **glaucoma** (*Archives d'Ophthalm.*), which has been already commented on in the special sense columns of the *Indian Medical Gazette*. He says that the fact that even total removal of the iris does not cure glaucoma, is to him a strong argument against the belief that glaucoma is caused by a retraction of the iris-tissue, thus closing the excretory passages. Another argument in favour of his idea is, he states, that an iridectomy performed upon a glaucomatous eye frequently provokes a temporary attack of the disease in the other hitherto sound eye. As in his former papers he recommends the extirpation of the superior cervical ganglion for the cure of the simple chronic form of the disease.

Demicheri of Montevideo found a patient who consulted him for subacute bilateral conjunctivitis to be suffering from **actino-mycosis of the conjunctiva**. On everting the upper lids the right presented nothing abnormal, but beneath the left were found several elevated points, each of which was of a yellowish-grey colour. They were situated along the upper border of the tarsus, almost at the limit of the cul-de-sac. For the most part they were from one to three-tenths of a mm in diameter, though some were larger. A microscopic examination of these areas confirmed the diagnosis of actino-mycosis. Their removal, being subconjunctival, effected a cure (*Archiv. d'Ophthal.*).

A. Troussier adds one more to the already fairly large list of accidents following **tattooing of the cornea** (*Annales d'Oculist*). While he does not absolutely discard the operation he advises conservation in regard to it, and above all he believes it, it is necessary to preserve as rigid an asepsis as possible. He holds that the operation should be performed only in those cases in which great betterment of vision, or else a greater facility to the patient in finding a means of livelihood can be promised. In the case reported, the patient submitted to the operation at the hands of another Surgeon for the purpose of hiding an adherent leucoma, sympathetic ophthalmia set in, and the patient became blind.

F. P. MAYNARD, M.B., D.P.H.

PATHOLOGY AND BACTERIOLOGY.

Colitis or Dysentery: an Etiological and Anatomical Study.—By A. W. Campbell (*Journal of Pathology and Bacteriology*, August 1899). The observations on which this paper is based were made in the Rainhill Asylum in Lancashire, in which, together with many other of these institutions, the disease is not uncommon. The author first discusses the question of no-

menclosure, and states that colitis as used in asylum reports, may be taken to mean a form of dysentery, and that in his opinion the identity between the disease, which in asylums it is customary to call colitis and epidemic dysentery, as distinguished from amoebic or sporadic dysentery, is undeniable. From a table compiled from the reports by the commissioners in the lunacy, it appears that 2 per cent. of the death-rate in English asylums take place from this disease, while in four of the large asylums of Lancashire the figure was 2·56. The disease affects persons of advanced years much more frequently than younger persons, and in the Rainhill Asylum, out of 28 cases of ulcerative colitis in 11 or 39 per cent. contracted granular kidneys were found, a relationship which had previously been pointed out by Hale White. The disease did not appear to be specially related to any particular mental or nervous diseases, although it was closely connected general debility and physical decay. The disease was most prevalent during the late autumn months.

In discussing the mode of infection, he excludes the water-supply as being good, and does not think the food was at fault including the milk. The sanitary arrangements were also good. Still the disease sometimes presents epidemic characters, and is sometimes connected with demented addicts to eating filth. With regard to infection, he considers that contact with cases of colitis is attended with danger, and points out that the disease has decreased considerably coincidently with the adoption of measures for the early detection and isolation of cases, and for the disinfection or destruction of the stools and the lavage of the large bowel with copious injections of bactericidal enemata.

The author then goes into detail with regard to the anatomy and histology of the lesions in colitis, concerning which it will be sufficient to say that his descriptions apply very closely with what we are only too familiar with in India; so much so indeed as to constitute a strong argument in favour of the view that the disease of English asylums resembles very closely indeed the disease so common in Indian jails.*

The later part of this paper is taken up with a long and interesting account of the evidence in favour of the various views as to the organisms which have been credited by different observers with playing an active role in the causation of the disease, and with some researches of the author on the subject. He first discusses amoebic dysentery, the amoeba coli of which Kartulis found in 500 consecutive cases in Egypt, and which have been cultivated, although usually together with various bacteria, in straw infusions by several observers, and he points out that in the vast majority of the experiments, whereby the disease was produced by the injection into the bowel of such cultures, the disease may have been set up by some of the bacteria present in the cultures and not by the amoeba, and he refers to Cunningham and Lewis having found the amoeba in cases of cholera, and to several other observers having found them in the stools of healthy persons. He admits that the disease has been produced by pus from a liver abscess containing amoebae but no other organisms, but questions if the observations were correct, and he refers also to the work of Councilman and Lafleur, but dismisses it equally lightly. He states that Celli and Fioca obtained pure cultures by an elaborate process but found that they possessed no virulence. His own experience convinced him that the amoeba coli can be eliminated as a cause of colitis. He next discusses bacterial dysentery and refers to the observations of several workers who found in dysentery organisms of the B. coli group with unusual pathogenic properties, and considers that there is strong proof that organisms of this group, or closely resembling them, may have the power of producing dysentery. After brief allusions to the possibility of the disease being due to mechanical toxic causes he comes to his own observations.

He details eight cases of colitis in which he isolated organisms morphologically similar to the coli group, but which exerted pathogenic effects on guinea-pigs and rabbits when inoculated intraperitoneally, consisting of symptoms of diarrhoea and *post-mortem*, occasionally some catarrh or excess of mucus in the large intestine. In four guinea-pigs which were fed on a culture all developed diarrhoea within forty-eight hours, and catarrh but no ulceration of the large intestine was found *post-mortem*. In other cases similar organisms were cultivated but not tested on animals, and in five cases the blood was examined for them with negative results, although he found the short rod-like organisms in the heart, blood, liver and kidneys, as well as in the floor of the ulcers in post mortems on cases of colitis. He concludes that a bacillus, which is indistinguishable from the *B. coli communis* in its morphological and biological characters, only differing in its possessing a greater virulence, stands in the closest causal relationship to the disease. This paper, although not entirely convincing is worthy of study and gives an excellent account of the literature of the subject.

Du Role Protecteur du Foie Contre la Generalisation Coli Bacillaire.—By Albert Lemaire. (*Archives de Medicine Experimentale*, Sept. 1899.) Coli bacilli were injected intravenously and the time they took to disappear from the general circulation and from the organs was studied. The conclusions arrived at were that, if slightly virulent organisms were injected, the blood is freed from them in a few hours, the bacilli perishing in the substance of the liver and not appearing any longer in the general circulation. If, on the other hand, the virulence of the organisms is exalted before they are introduced, the blood is incompletely purified, and a few of the organisms continue to circulate. Some of these are destroyed by the phagocytes of the blood, but the survivors multiply, break through the cellular barrier which has stopped them and produce a general infection. The role of the liver is then to prevent the generalisation of the coli bacilli, and if it fails to do so a generalised disease ensues.

The Production of Scarlatina by Inoculation.—(By Stickler, *Med. Rec.*, Sept. 1899.) The secretion from the mouth and throat of a case of mild scarlatina was mixed with one six hundredth part of carbolic acid in an attempt to develop a protective inoculation, but in every case a genuine scarlet fever resulted. This proves that the contagium of the disease is certainly present in the mucous of the mouth and throat, as well as in the skin, and points to great care being necessary to keep these parts moist in order to prevent the contagium from getting into the air and to disinfect everything which might have come into contact with the discharges from the mouth.

The Bacillus of Bubonic Plague, Bacillus Pestis.—By Richard E. Hewlett. (*Transaction of the British Institute of Preventive Medicine*.)—The material for this investigation was obtained from the case of plague which was admitted into the Seamen's Hospital, London, pure cultures being obtained from a guinea-pig which was inoculated with an emulsion of the enlarged femoral gland from the case obtained *post-mortem*. A brief summary of the earlier work by Kitasato and Yersin and Yettnow is first given, and then the author gives in detail the results he obtained himself which were as follows: The *post-mortem* on the guinea-pig showed haemorrhage and oedema at the seat of inoculation, great enlargement of the inguinal lymphatic glands, an enlargement of the spleen to five times its normal size, with congestion and numerous yellow points like miliary tubercles. All the organs and blood showed large numbers of a short thick ovoid bacillus with rounded ends, generally in pairs, and so short as to resemble a large diplococcus, measuring from $2\mu \times 1.7\mu$ in the animal body, but in cultivation they were often so short as to

be almost cœvoil or slightly ovoid, with a few rod or thread like forms sparsely distributed in the specimens. In broth chains of slightly ovoid forms were seen appearing at first sight like a streptococcus. The organism is non-motile. It sometimes appears to be encapsulated, but this could not be shown by staining methods.

On blood serum it forms moist-smooth, shining, cream-coloured colonies slightly raised. The serum is not liquified. Agar cultures show raised round, cream-coloured colonies measuring 0.25 to 0.5 mm. in two days at 37°. Sugar agar stab cultures show a cream-coloured narrow streak extending to the bottom of the stab. Gelatine colonies show whitish finely granular colonies measuring 0.1—0.25 mm. in five days at 22°. Gelatine surface streak cultures show a narrow thick white shining growth with irregular margins which do not penetrate or render cloudy the medium, but is very adherent. Gelatine stab cultures show a delicate finely granular narrow growth extending to the end of the track and not liquifying the medium. Broth cultures show a somewhat characteristic flocculent growth on the bottom and sometimes on the side of the tube while the fluid remains clear for some days, and with no or very slight surface film. The organism does not grow on ordinary potatoe, nor does it coagulate milk. In week old broth cultures it gives a feeble indol reaction on the addition of sulphuric acid alone, and a well-marked one if a nitrite is also added. It gives no reaction with neutral litmus agar, but a well-marked acid one with neutral litmus sugar agar, and it reduces a weak mythelene blue broth-culture. The cultures retain their vitality for at least one month.

When inoculated into guinea-pigs, it kills them in from three to seven days, but if they die within three days, the enlargement and nodulation of the spleen may not be marked. Mice die in two or three days with markedly enlarged spleens. Rats, if fed on organs of a guinea-pig dead of the disease, die in about a week. The organism is found in all parts of the body, most abundantly at the seat of inoculation and in the glands and spleen, less so in the liver, lungs and kidneys, and much less so in the blood. The tissues show cloudy swelling, hyperæmia and minute haemorrhages.

Trachoma: Original Investigations on its Aetiological Organism.—By Sandaches. (*American Medical Association*, February 4th, 1899.)—The author states that he has obtained the organism of trachoma in pure culture, and has produced the disease in the human conjunctiva, from which he has again obtained the organism of which the following is the description:—It resembles in some respects the pneumonococcus, being a round diplococcus which is enveloped in a gelatinous capsule as seen in the tissues. It is, however, smaller than the pneumonococcus and is slightly motile. In the tissues they lie in small groups. In bouillon they are seen as diplococci, and sometimes in short chains. The organism grows rapidly at 37°; rendering bouillon turbid in 36 hours, and forms an abundant growth on serum in 48 hours, forming white, moist, membranous-like streak along the line of inoculation, the centre being yellowish, but the edge white. On agar it presents a similar appearance, only it is more raised and the difference in colour of the centre and edge is more marked. In bouillon at the end of ten days it forms a white sand-like deposit at the bottom of the tube. In gelatine the growth is somewhat funnel-shaped, forming a white membrane at the surface with scalloped edges, and white, wavy thread-like growth along the stab. The gelatine is liquified very slowly on the surface only. The organism is facultatively anaerobic, and after one week in any media, but especially in bouillon it has a pronounced urinous odor, which later becomes very offensive.

Mushroom Juice as an Antitoxin against Serpent Venom.—By M. Phisatex. (*International Medical Magazine*, April 1899.)—The author, as a result of various experiments, found that all kinds of mushrooms.

possess a substance which acts as an antitoxin against serpent venom. If the juice of the ordinary hot-bed mushroom is extracted by pressure or by maceration in water and inoculated into a guinea-pig, the animal is rendered absolutely refractory to serpent venom. The inoculation, however, seems to possess toxic properties which vary in degree, according to the size of the dose. In a rabbit, for instance, the injection of 25 c. cm. of mushroom juice is fatal, the animal dying from intravascular coagulation. To avoid these results M. Phisatex tried filtering and boiling the juice, but, all the same, the toxic properties remained, although they were much diminished.

Typhoid and Typhoidal Complications.—By Masias and Rolf. (*Annales de la Soc. Med.-Chirurg. de Liège*, Janvier 1899.)—The authors report two interesting complications of enteric fever. In the first case there was profound prostration with rapid pulse and high temperature and delirium. There was also a point of osteomyelitis over the lower end of the right femur with swelling and tenderness of the periosteum. Blood was taken from the bend of the elbow and inoculated upon bonillon and gelatine, and about 30 colonies of the typhoid bacillus in each cubic centimeter developed. At the time the dissemination of the bacilli was believed to have taken place there was a sudden rise in the temperature and pulse rate, and the diazo-reaction became much more marked. The patient died, and the authors believe all cases of typhoidal septicaemia to be fatal. The second case was one of abscess of the kidney developing at the beginning of the third week of the attack of typhoid. There was a sudden increase of the albumen in the urine with an irregular temperature, which fell to normal after a nearly fatal attack of intestinal haemorrhage. The urine, which had been clear, suddenly became cloudy, and showed on sedimentation a large amount of pus without casts or blood cells, but containing slender agglutinated bacilli, and necrotic portions of the renal tubules and glomeruli. The inferior extremity of the right kidney was palpable, and after what was believed to have been a rupture of an abscess the organ diminished in size.

LEONARD ROGERS, M.D.

OBSSTETRICS.

Operations on the Cervix Uteri from an Obstetrical Standpoint.—In a discussion on this important subject before the Paris Obstetrical Society, following the reading of a communication from Pinard, Bonilly calls attention to the fact that if trachelorrhaphy or excision of the cervix is properly performed, there is less likely to be dystocia, than in cases in which the diseased tissue is not thoroughly removed. *De Ribes* had seen only one case in which delivery was rendered difficult by previous amputation of the cervix, as the tissue usually softened under the influence of pregnancy. In this instance manual dilatation overcame the obstruction. *Segond* admitted that cases might occur in which rigidity of the cervix during labor would result as the result of excision, even when the operation was properly performed. He therefore believed that it should be limited to cases in which it was clearly indicated, and should not be performed indiscriminately where a simple curettage was often sufficient. *Porak* thought that gynaecologists were not in a position to present reliable statistics, since only a small proportion of the cases were kept under observation. He cited two cases, in one of which he was called to perform embryotomy upon a woman who was moribund after being in labor for several days. The cervix, which had been amputated, remained rigid and undilatable, so that dystocia was complete. In another instance labor had continued for five days on account of rigidity of the cervix, resulting from previous amputation and rupture of uterus occurred. In the writer's opinion the rigidity of the cervix in these cases was due

to incomplete removal of all the cicatricial tissue during operation. *Lepage* was of opinion that non-dilatability of the cervix during labor was due not only to failure to obtain primary union after excision, but to the fact that too radical an operation was often performed, so that no vaginal portion whatever remained. It was easy to understand that, in the event of a laceration of such a cervix, the lower uterine segment would be apt to be involved. It was important to bear in mind when operating upon the cervix, not to remove any more tissue than was necessary, in order not to interfere with the physiological development of the gravid uterus. *Pinard*, in closing the discussion, stated that rigidity of the cervix during labor was not confined to operations performed for the removal of diseased tissue, and cited two cases of simple incision for stenosis in which labor was attended with the same complication which had been described. The speaker was in favour of immediate trachelorrhaphy in cases of extensive laceration by which subsequent cicatrization was prevented.—(*Amer. Jour. of the Med. Sciences*.)

Experiments upon the Closure of the Fallopian Tubes.—*Fraenkel* gives the results of experiments conducted with a view to determine an efficient method for closing the lumen of the Fallopian tubes. He ligated the tubes at various points with catgut, silk of different sizes, and on some severed the tubes with the thermo-cautery. Most of these attempts, however, were unsuccessful, and the lumen of the tube was found to persist and to be reformed in spite of ligation. Various changes in the tubes followed ligation, the ligatures, when silk, remaining unchanged. He then dissected a portion of the tube and examined the animal ninety days after the experiment. It was found that the lumen of the tube had been apparently restored, and the same result followed with the use of thermo-cautery. In some cases hydrosalpinx formed and in a few adhesions. He has collected a number of clinical cases where a considerable portion of the tube has been removed but where pregnancy subsequently occurred, and this result is illustrated in his own experiments when he found the tube restored after amputation and ligation. He reaches the conclusion that the function of the tube can be destroyed only when the tube is entirely removed and its uterine terminations excised and tissues closed with a flap of peritoneum.—(*Amer. Jour. of the Med. Sciences*)

K. N. DAS, M.D.

Correspondence.

MALARIAL PIGMENTATION.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—While inspecting Gazoli Dispensary on the 26th December last, I saw two most interesting cases of malarial fever.

Jira, a boy, 16 years old, a Mahomedan of the Momin caste, and his brother aged 10, were brought before me by the anxious mother, who was much alarmed at the sudden change of colour of her children. They had suffered from malarial fevers on and off for years and continuously since last June. Other children in the village had suffered as severely from fever, but these two boys only had turned in the space of a month from an ordinary dark to a Nubian black colour. Jira was getting fever every third day, accompanied with severe headache and burning of the eyes. He got an attack before me of the true ague type. The boy had been of a dark complexion, but had lately turned so black that he could not be recognised as the same person. The skin was deeply pigmented, the pigmentation being uniform and general. From head to foot it was of the same Nubian dark colour. The trunk and extremities were affected equally, both where exposed to light and where not. The soles and palms were also affected, but to a somewhat slighter degree. The nails were of deep purple colour. The conjunctive, the mucous membrane of the buccal cavity, and the tongue were pigmented in points and patches, the pigmentation being very intense. The spleen was enlarged to

about 2½ inches below the costal arch. The general health did not look to be very bad; there was a certain amount of anaemia, but the body was not emaciated. Heart and lungs were healthy, tongue clean and appetite fair, bowels open, eyesight and hearing good. The history of Nobo, the younger boy, was exactly the same, and the same description applies.

I had been to Assam and have seen cases of *Kala-Azr*. They change colour, though not all, but I never saw a case of such deep and universal pigmentation as the two, who assuredly would have been put down as veritable cases of the dreadful Assam fever, had they been discovered in or anywhere near that country. Malarial fever has been raging this year in the Malda district; the mortality in October was 72 per mille per annum, the highest in Bengal. One could hardly believe that a district so situated and with such physical characters could be so unhealthy as it is in fact. Why should this be so? This is a problem that requires an early solution. Since the days of Gaur and Panduah, the district never saw a town of more than 20,000 inhabitants, and is not likely to see one, till this problem is solved, and something practical results from it.

Yours, &c.,
H. SEN, M.B.,
Civil Medical Officer.

[Dr. SEN raises an interesting question as to the cause of the frequent abandonment of Gaur, the seat of the old Kings of Bengal, and the later Pathan Kings. It is usually said that it was on account of repeated epidemics of cholera that the city was finally deserted. There appears to be little evidence either way, but it may be noted that extensive sheets of swamps and water extended from the river Mahananda to the city walls. Traces of enormous embankments still remain, which must chiefly have been intended for defence against floods. In fact, the Ain-i-Akbari alluded to the fact that, "if the earthen embankment broke the town was under water." This would point to a prevalence of malarial fevers there in ancient days, and it is easy to imagine such becoming of epidemic intensity.—Ed., I. M. G.]

Service Notes.

ONE of the most satisfactory aspects of the present war has been the admirable way in which the Medical Department has been working. It is unnecessary for us to repeat what all the papers (both lay and medical) have told us about the very elaborate arrangements for the care of the sick and wounded. These resources however large have been and will be severely tried before the war is over. It is especially satisfactory to read of the magnificent way in which the ambulances have worked in the battles already fought. At Magersfontein Reuter's correspondent wired as follows:—"The ambulance service was magnificently organised, and the bravery of the surgeons while attending the wounded in the firing line is the subject of the highest admiration among our men." The *Times* correspondent writes in the same strain: "The work of the medical staff was beyond praise. Their promptness in relieving and removing the wounded under hot fire was extraordinary, though the doctors were ultimately compelled to forego attending the wounded near the trenches as many men who might otherwise have been saved were shot while being attended to, the enemy's fire being always drawn to those points." Another correspondent wires—"The greatest bravery was shown by the officers and men of the Royal Army Medical Corps in dressing the injuries of the wounded and in bringing them in under heavy fire. Carteson, attached to the Seaforth Highlanders, went into action with the regiment early in the morning, and dressed the wounds of several men in the fighting line, and brought others to the rear. When the ambulance was brought up at noon the Boers would not allow it to come nearer than 500 yards. Ensore, however, went on alone within 300 yards of the enemy, and brought back a wounded man, although a heavy fire was directed on him by the enemy. Captain Probyn, attached to the Gordon Highlanders, walked erect up and down the firing line attending to the wounded officers and men under a hail of bullets. All the doctors and stretcher-bearers, indeed, showed the greatest coolness." The news to hand by the mail proves that we were right in surmising that the medical officer killed in the action at the Tugela was Captain M. Louis Hughes. He went out as special Sanitary Officer to the Principal Medical Officer of the Natal Force. His death is a distinct loss to the Corps, as he was one of the most promising scientific officers in the corps. He passed out Netley taking first place, and the Parkes' Memorial Medal in 1890. His last contribution to the medical press was an account of a curious series of cases of poisoning among the troops at Alder-shot. We had the pleasure of very favourably reviewing his book on "Undulant Fever" a couple of years ago in these columns, and it shows what he was capable of doing as an investigator and as a writer.

THE following quotation from the book everyone is reading, Fitzpatrick's "Transvaal from Within" shows that the numerous white flag incidents and firing on the ambulances is no new invention.

tion of the present war. "At Ingogo the Boers raised the white flag, and when in response to this General Colley ordered the hoisting of a similar flag to indicate that it was seen, a perfect hail of lead was poured on the position where the General stood; and it was obvious that the hoisting of the flag was merely a ruse to ascertain where the General and his staff were. There was the ambulance affair at Majuba, when the Boers came upon an unarmed party bearing the wounded with the red cross flying over them, and after asking who they were and getting a reply, fired a volley into the group, killing Surgeon Major Cornish. There was the siege of Potchefstroom, during which the Boer force under Commandant Cronje were guilty of actions contrary to the usages of civilised warfare. They are matters of history, and can easily be verified."

INSTRUCTION in tropical diseases has been begun at the John Hopkins' University Medical School, doubtless as one result of the commission recently sent to the Philippine Islands.

A BILL for the increase of the Medical Department of the Army of the United States has been prepared by the Surgeon-General and approved by the Secretary of War. It enacts for the addition of four Assistant Surgeon-Generals with the rank of Colonel, ten Deputy Surgeon-Generals with the rank of Lieutenant-Colonel, thirty surgeons with the rank of Major and eighty assistant-surgeons with the rank of First Lieutenant, who shall have the rank of Captain at the expiration of five years' service, as now provided. Hereafter candidates for appointment in the Medical Corps of the Army, who pass a medical examining board, shall be appointed acting assistant-surgeons for a probationary period of six months, during which they shall attend the Army Medical School at Washington, their pay during the period of probation shall be one hundred dollars a month.

The bill is being discussed in all the American medical papers, and has their hearty support. The following remarks from an able editorial in a current number of the *New York Medical Journal* is worth quoting: "The medical department of Army is not alone for the succour of the sick and wounded. This is one of its great functions, but its greater function is to maintain the fighting force at its highest efficiency by preventing, so far as possible, disability of the individual members of the force by sickness. It necessarily follows that the Military Surgeon is not only a medical and surgical practitioner but a sanitarian, and an executive officer as well. The organisation of a medical department requires divisions and sub-divisions of authority by which its efficient working may be maintained. It follows that, however great the ability of a civil practitioner may be, he cannot enter upon and immediately perform with efficiency the duties of a military medical officer. The questions of hygiene and sanitation which come up in the military service are peculiar and unlike those of civil life. The aggregation of large numbers of men in camp and field calls for special knowledge of hygiene and sanitation relative to conditions which the civil practitioner never meets with. Then, too, in time of war, large general hospitals have to be established which require for their efficiency a high order of executive and administrative ability on the part of the surgeons in command. These branches cannot be properly administered except by men conversant with the complex methods incident to a highly specialised organisation. The number of officers in the medical department of the Army is now so small that it barely sufficed for the needs of the Army when on a peace basis, before the outbreak of the war with Spain, and was utterly inadequate in number to serve efficiently as a nucleus for organisation when the Army was increased. Now the increase in our coast defence has led to the establishment of eighteen posts in the department of the East and ten on the Pacific coast, and a number of new posts have been established in the Hawaiian Islands and in Puerto Rico. To these are to be added a large number of stations in Cuba and in the Philippine Islands. It seems to us that the bill as presented is an altogether wise and most necessary one, and we ordinarily recommend it to the approval and support of the profession at large. The dignity and standing of the profession at large are affected either for good or for ill by the efficiency or inefficiency with which the Medical Department of the Army performs its work."

LIEUTENANT-COLONEL C. SMART, M.D., of the U. S. A., writes a very able and timely letter in the American medical press on the much-criticised ration for the American soldier. He points out what the critics have failed to see, viz., that there are a large number of edible substances which may be substituted for the ration as laid down in the codes; for instance, the meat component does not consist only of fat pork or bacon. Instead of this there may be substituted fresh beef or fresh mutton, or salt-beef or dried fish or canned salmon or fresh fish. In the same way the bread component consists of either flour or soft bread or hard bread or of corn meal. There is an equal variety in the choice of the vegetable and fruit component. A very slight

knowledge of cookery will enable anyone from this to judge of what Colonel Smart calls the "flexibility of the army ration." The ration is also elastic, for the soldier, if he does not care for any particular item in the ration can substitute it for any other food substance of equal money value. Thus if he does not require his candles or his bacon, he can receive instead any other thing of equal money value. The ration is fixed by law; but the dietary depends upon the intelligent supervision of the company officers and the ability of the company cooks. There is no need to talk about a change in the ration to effect a change in the dietary. The United States Army ration is the most liberal ration in the world. The best dietary for the tropics is a wholly different subject from the ration, and we shall await with interest the publication of the observations of our officers on the modifications which appear to them judicious for Cuba and the Philippines."

THE medical staff of the Portland Hospital which has gone to the Cape consists of Mr. Anthony Bowlby, of St. Bartholomew's, Mr. Cuthbert Wallace, Mr. Ernest Calverly and Dr. Henry Tooth.

MAJOR W. RONALDSON CLARK, M.B., I.M.S., Joint Civil Surgeon of Simla, is appointed to the medical charge of Army Head-Quarters Staff at Simla, with effect from 1st December 1899.

It is notified for information that it has been decided that medal ribbons only shall be worn with white uniform. The helmet and plume should, however, continue to be worn with such uniform in review order during the hot season. (Letter No. 1847-D, 6th September.)

THE INDIAN MEDICAL SERVICE DINNER.

A MOST successful dinner of the Indian Medical Service was held at the Hotel de Paris in Calcutta on January 6th, the Director-General being in the chair. The following officers attended, R. H. Harvey (March 1865), T. H. Hendley (October 1869), C. H. Joubert (March 1872), E. G. Russell (March 1872), D. P. Macdonald (April 1873), E. Mair (March 1874), R. D. Murray (March 1875), R. Macrae (March 1875), F. F. MacCartie (March 1878), G. F. Harris (September 1878), R. R. H. Whitwell (March 1880), D. B. Spencer (March 1880), J. B. Gibbons (October 1881), R. R. H. Charles (April 1882), J. H. T. Walsh (April 1884), D. Prain (October 1884), F. J. Drury (April 1885), H. J. Dyson (April 1885), A. W. Alcock (October 1885), B. K. Basu (April 1886), W. H. Pilgrim (September 1886), E. H. Brown (September 1886), J. G. Jordan (September 1886), W. J. Buchanan (October 1887), F. O'Kinane (January 1891), B. H. Deare (July 1891), R. Bird (July 1891), W. E. A. Armstrong (January 1892), E. A. R. Newman (July 1893), C. J. Milne (January 1895), A. Gwyther (January 1895), E. E. Waters (July 1895), W. W. Clemesha (January 1896), and H. J. Walton (July 1896). Surgeon-General R. Harvey in a short but eloquent speech proposed the toast of "Prosperity to the Indian Medical Service," on behalf of which Colonel T. H. Hendley replied. After this Majors Brown and Jordan and Captain Deare sang several songs. The company did not leave till close on one o'clock.

The music was provided by the excellent band of the 4th Rajputs.

LIEUTENANT-COLONEL W. H. GREGG, M.B., D.P.H., I.M.S., has retired from the service. He entered the service in October 1869. He was Sanitary Commissioner for Bengal for seven years, after which he was appointed Civil Surgeon of Burdwan. His health broke down, and he went home in July 1898. He is the author of a Text-Book of Botany for Indian students.

FURTHER details of the new Corps uniform of the R. A. M. C. are published. It has been decided to have cherry-red facings, the stripes of the overalls is to be scarlet, divided by two narrow bands of cherry-red. The mess waistcoat remains scarlet and full up to the neck as before. The new badge is to be worn in all orders of dress.

THE Natal Volunteers have done so well during the present war that it is with pleasure we notice the valiant deed of Surgeon-Captain R. A. Buntine, near Van Rennan's Pass at the commencement of the war. The Natal Carbineers were returning to camp leaving a wounded trooper on the ground. Dr. Buntine rode back, placed the severely wounded man on his own horse and so brought him safely back to camp. He has, it is said, been recommended for the V. C. He was in private practice at Maritzburg before the war and is Australian born, of Scotch extraction.

CAPTAIN AND ASSISTANT-SURGEON E. L. MUNSON, U. S. Army, writes an interesting article, in the *Boston Medical and Surgical*

Journal, on tents for service in the tropics, based on his experience in the recent Spanish-American war. His suggestions are practically what has been already adopted in all Indian field service tents; the main points being an air space between the inner and outer fly, to which he would add a space of netting near the ridge of the inner fly, to allow of the escape of heated air. He also suggests that the outer fly should be considerably larger than the inner to throw a shade all round. By experiments he showed such a tent was from 4 to 8 degrees cooler than the older pattern.

CAPTAIN HUGH BENNETT, I.M.S., M.B., C.M., has passed the examination for the Fellowship of the Royal College of Surgeons, Edinburgh.

ACCORDING to the official lists issued by the War Office, in the end of December, the total British losses from the beginning of the war reached the considerable total of 7,639 officers and men killed wounded and missing, of whom, however, only 5,777 had up to that time been identified with their respective regiments. To these figures must be added the 218 killed, wounded or missing since the first of January at the neighbourhood of Colesberg. The extent of the losses in and around Ladysmith are as yet only imperfectly known. On the 12th of January Reuter informed us that there had been no less than 23 deaths from enteric fever in Ladysmith in the first eight days of the new year. Surgeon-Major Walker also is reported to have died of dysentery.

THE *Pioneer's* London correspondent wires that the War Office has ordered the discontinuance of the manufacture of the Dum-Dum bullet.

OUR contemporary, the *United Service Gazette*, had recently an excellent article upon the present undermanned condition of the Royal Army Medical Corps: "Where we might ask is the reserve to supply any casualties which may occur in South Africa and foreign stations? . . . Civilian Surgeons have been very largely employed, . . . some 68 of these have been employed in South Africa; and at home stations no small number. It is a complete fallacy to imagine that the medical, administrative, and disciplinary duties of military hospitals can be as efficiently performed by civilian practitioners as by trained army surgeons. We have heard that during the Egyptian War, when civilian surgeons were employed at home, they largely ordered "extras" to the patients when not needed, and thus increased expenditure. We do not mean to depreciate the professional work of civilian practitioners; but we must allow that they cannot as efficiently perform military medical work, as army surgeons, who are specially trained at Netley and Aldershot."

INSPECTOR-GENERAL J. S. PRENDERGAST, M.D., who died recently at Bath, was born so long ago as 1810. He was educated at Trinity College, Dublin, and entered the medical service of the Army in 1836, and retired in 1863 as Inspector-General. He served in the Crimea with the 77th Regiment, and while in Bulgaria was appointed to the personal staff of Lord Raglan.

THE *Army and Naval Journal* gives a description of a new style of marching, "flexion marching," as it has been called.—"The knees must always be bent; the feet lifted no higher than necessary to clear inequalities of the ground; the advancing foot must be placed flat on the ground, the step being made neither by the toe nor by the heel. The foot-fall should be noiseless, and the steps at first short and frequent, the body must lean well forward, the back must be straight and the head erect, the chest open and the shoulders low. It is recommended that at drill, a short stick be held with both hands in front of the chest. . . A table is given of the distance to be traversed in each of the 36 lessons, beginning with 3,000 yards and going up to 12,000. It is added that a three months' drill is necessary to thorough training. Dynamometric experiments are said to have shown that the foot does not press so heavily on the ground as in the ordinary style of marching, and it is therefore suggested that the man has more strength left to expend in propulsion. A body of French troops have undergone training in this style of marching at Nantes, and it is said that after three months' instruction they marched in the presence of General Fay, carrying their rifles, a hundred rounds and food for one meal, along a hilly road a distance of 12 miles in an hour and forty-six minutes, that is at the rate of over seven miles an hour. Not a man fell out by the way."

SIR LAUDER BRUNTON writes to the *Lancet* to recall attention to the utility of morphine injections in saving suffering during the removal of wounded men from the field of battle. As a matter of fact this is a recognised practice of Army Surgeons, and a bottle of morphia and an hypodermic syringe are provided in every Field Medical Companion for this very purpose.

FEB. 1900.]

PROFESSOR OGSTON has sailed for South Africa, it is understood, that he has gone out in a purely private capacity.

THE undermentioned Surgeons on probation of the R. A. M. C. are appointed Lieutenants: F. H. Merry, H. C. R. Hime, C. C. Cumming, W. M. McLoughlin, J. A. Hartignan, J. F. Martin, E. McDonnell, C. S. Smith, A. H. Safford, A. J. M. Cuddon, Fletcher, A. F. Carlyon, J. M. Buist, R. L. Davis, C. S. Cato, R. Evans and W. C. Croly.

These officers passed the special examination held at Netley in December instead of in the end of January, as is usual. Many of them have already gone off to South Africa.

THE *Lancet* (for December 23rd) contained a very valuable article by Professor A. E. Wright and Captain George Lamb, I.M.S., on the question of the influence which is exerted by agglutinins in the infected organism. It is an excellent example of the kind of training now given at Netley in bacteriological research.

THE Secretary of State for War has approved of the period of leave out of India granted to executive officers of the R. A. M. C. on medical certificate, during a tour of service being allowed to count towards the completion of such tour up to a maximum of twelve months; formerly, we understand, only six months were allowed.

LIEUTENANT-COLONEL MACONAGHEY, I.M.S., Civil Surgeon of Lucknow, received a wire from the War Office to say that his son, Lieutenant Maconaghey, of the Scotch Fusiliers, was taken prisoner at Tugela and is now quite well at Pretoria.

MAJOR WOODS, R.A.M.C., is among the wounded at Ladysmith, in the great fight of the 6th January.

CAPTAIN A. E. HAYWARD PINCH, I.M.S., F.R.C.S., has been, we see, appointed Medical Superintendent of the new Polyclinic Medical College for Graduates in London. Last month we noted that Captain Pinch had been placed on temporary half pay.

SURGEON-GENERAL A. F. BRADSHAW, C.B., R.A.M.C., who will be remembered as Principal Medical Officer, H. M.'s Forces, India, has been appointed an Honorary Surgeon to the Queen.

SIR WILLIAM STOKES, of Dublin, Mr. Watson Cheyne, of King's College, Mr. G. L. Cheatle, F.R.C.S., of King's College, and Mr. Kendal Franks, F.R.C.S.I., have been appointed Additional Consulting Surgeons with the Forces in South Africa.

Mr. Kendal Franks was, a few years ago, one of the leading Surgeons in Dublin, and left Ireland for South Africa, on account of his wife's health. He set up in Johannesburg and became a prominent Outlander Reformer there. He only just escaped from that city in time to avoid arrest at the outbreak of the war. He was called in consultation about General Penn Symon's wound, and, we believe, performed the operation necessary in that case.

THE *Times'* correspondent in his account of the first Tugela River battle writes as follows of the medical arrangements: "It is satisfactory to record such a splendid performance. At a time when criticisms of everything and everybody are flying about, the admirable organisation of the medical department, and the perfect smoothness of its working deserve the fullest recognition."

Gazette Notifications.

GOVERNMENT OF INDIA.

The services of Captain C. J. MILNE, I.M.S., are placed at the disposal of Bengal. Captain ENTRICAN, I.M.S. (Madras), is appointed a probationer in the Chemical Examiner's Department.

The services of Lieutenant SARGENT, I.M.S., are replaced at the disposal of the Military Department.

Major LLOYD JONES, I.M.S., is appointed Deputy Assay Master, Bombay.

Lieutenant-Colonel A. H. C. DANE, I.M.S., Agency Surgeon in Bhopal, to be Agency Surgeon of the first class.

Colonel D. SINCLAIR, C.S.I., I.M.S., to be Surgeon-General (dated 11th October 1899).

The Queen has approved of the retirement of the following officers:—

Lieutenant-Colonel R. L. DUTT, I.M.S.

Lieutenant-Colonel JAMES ARMSTRONG, I.M.S.

N.W. PROVINCES AND OUDH.

Lieutenant-Colonel P. M. ELLIS, R.A.M.C., to be Civil Medical Officer of Raniket in addition to his military duties.

The services of Major A. R. W. SEDGEFIELD, I.M.S., are placed temporarily at the disposal of the Government of the N.W. P.

Her Majesty has approved of the retirement from the service of Lieutenant-Colonel W. H. CADGE, I.M.S., from 15th November 1899.

Major E. HUDSON, I.M.S., F.R.C.S., is granted extraordinary leave, without allowances, for the 6th November 1899.

Captain C. MILNE, I.M.S., Civil Surgeon of Jaunpur, was placed on special duty at Lucknow in connection with the National Congress Camp.

The services of Major W. H. E. WOODWRIGHT, I.M.S., and of Major J. K. CLOSE, I.M.S., are placed permanently at the disposal of the N.W. P.

The services of Major C. C. MANIFOLD, I.M.S., are placed temporarily at the disposal of H. E. the Commander-in-Chief from 15th January 1900.

Captain H. AUSTEN SMITH, I.M.S., is appointed to act as Superintendent of the Central Prison, Allahabad, vice Major C. Mactaggart, I.M.S.

Lieutenant-Colonel JAMES ARMSTRONG, I.M.S., resigns his commission in the 5th Administrative Battalion, N.W. P. and Oudh Volunteers.

BENGAL.

Lieutenant-Colonel W. OWEN, I.M.S., Factory Superintendent, Behar Opium Agency, having returned from leave, the unexpired portion of his leave is cancelled.

Major N. P. SINHA, I.M.S., Civil Surgeon of Rangpur, was allowed leave for twenty days from 29th July to 19th August 1899.

Major T. R. MACDONALD has been granted six months' extension of furlough.

Lieutenant-Colonel D. W. D. COMINS, I.M.S., Inspector-General of Jails, Bengal, has been allowed an extension of furlough for six months.

Major D. G. CRAWFORD, I.M.S., reported his departure on furlough on 19th December 1899.

Major A. H. NOTT, I.M.S., resumed charge of the Central Jail at Hazaribagh on 19th December 1899.

Major W. J. BUCHANAN, I.M.S., has passed in Bengali by the colloquial test.

Major E. HAROLD BROWN, I.M.S., made over charge of Mozufferpur Jail to Major C. R. M. GREEN, I.M.S., on 4th December.

Major L. A. WADDELL, I.M.S., is appointed to act as Civil Surgeon of Monghyr.

Captain W. D. HAYWOOD, I.M.S., is appointed to act as Deputy Sanitary Commissioner, Northern Bengal Circle.

Captain C. R. STEVENS, I.M.S., was granted one month's special leave (Tirah) from 13th September 1899. Major W. J. BUCHANAN, I.M.S., acted for him in addition to his other duties.

Captain C. J. MILNE is appointed to be Resident Physician, Medical College Hospital.

Military Assistant-Surgeon J. J. A. BRACHIO is appointed to act as Medical Officer at the Sandheads until further orders.

Major C. R. M. GREEN, I.M.S., is appointed to act as Civil Surgeon of Mozufferpur during the absence of Major F. S. PECK, I.M.S.

Major E. H. BROWNS, I.M.S., is appointed to act as Civil Surgeon 24-Pergunnahs, and Medical Inspector of Emigrants.

Captain A. W. P. COCHRANE, I.M.S., is appointed to act as Civil Surgeon of Lurbunga.

BOMBAY.

Captain D. C. JOHNSTON, I.M.S., to act as Deputy Sanitary Commissioner, S. R. D., pending relief by Lieutenant-Colonel O. H. CHANNER I.M.S.

Captain S. E. PRALL, I.M.S., on relief by Major L. F. CHILDE, to act as Civil Surgeon of Nasik.

Captain F. A. SMITH, I.M.S., to be Civil Surgeon of Sukkur.

Captain A. G. HEATH, I.M.S., has been allowed an extension of leave (m.c.) by the Secretary of State.

Lieutenant-Colonel H. W. B. BOYD, I.M.S., Physician, St George's Hospital, Bombay, has been allowed to return from furlough within his period of leave.

CENTRAL PROVINCES.

Lieutenant-Colonel H. K. MCKAY, I.M.S., is appointed to be Superintendent of the Lunatic Asylum at Jubbulpur.

Captain A. G. HENDLEY, I.M.S., on return from leave, resumed medical charge of the Hosangabad District.

Major A. SILCOCK, I.M.S., is appointed to be Medical Officer, Nagpur Volunteer Rifle Corps, vice Lieutenant-Colonel C. F. A. HARRIS, I.M.S.

MILITARY DEPARTMENT.

Captain J. FISHER, M.B., D.S.O., I.M.S., has been granted furlough out of India for one year.

Major P. HENIR, I.M.S., 43rd Gurkha Rifles, has been granted an extension of leave (m.c.) for three months.

The Lieutenant-General, Commanding the Forces in Bengal, is pleased to make the following appointments:—

Lieutenant D. McCAY, I.M.S., to the officiating medical charge of the 14th Bengal Lancers.

Lieutenant C. HUDSON, I.M.S., to the officiating medical charge of the 2nd Bengal Infantry.

Lieutenant C. F. WINMAN, I.M.S., to the officiating medical charge of the 3rd Bengal Infantry.

Lieutenant T. HUNTER, M.B., I.M.S., to the officiating medical charge of the wing of the 6th Bengal Infantry at Baksa, Duars.

Captain J. A. HAMILTON, M.B., I.M.S., to the medical charge, pro tem., of the 9th Gurkha Rifles, vice Captain J. G. HULBERT, I.M.S.

Lieutenant J. C. A. LEICESTER, I.M.S., to the officiating medical charge of the 13th Bengal Infantry.

Lieutenant W. S. WILMORE, I.M.S., to the officiating medical charge of the 16th Bengal Infantry.

Lieutenant C. DYKES, I.M.S., to the officiating medical charge of the 17th Bengal Infantry.

Lieutenant H. B. MEAKIN, I.M.S., to the officiating medical charge of the 39th Garhwal Rifles.

THERAPEUTIC NOTES.

Messrs. Burroughs, Wellcome & Co. contributed in its entirety the medical outfit of the Hospital Ship *Maine*, provided for the use of the sick and wounded in the war by the Committee of American ladies. Provision is afforded for at least 200 patients. We have seen the designs of one of the medical chests, it is in tooled leather, designed by Mr. Henry S. Wellcome. Smaller similar cases also fitted with "soloid" and "tabloid" products were supplied for use in various parts of the ship. The big chest bears the following designs: on the top panel appear the Union Jack and Stars and Stripes entwined, with portraits of George Washington, Queen Victoria and President McKinley, and representations of the British Lion and the American Eagle. The front panel has portraits of Lady Randolph Churchill (President), Mrs. Ronalds (Hon. Treasurer), and Mrs. Blow (Hon. Secy. of the Committee); a picture of the Hospital Ship *Maine*, a scene representing the Lion wounded by an arrow, being administered to by Britannia and Columbia. A frieze is formed by a representation of American Indian-Wampum on which are depicted Brother Jonathan and John Bull grasping hands. The panel at each end represents Britannia and Columbia holding up a banner bearing the Red Cross. Prominently inscribed on the chest are, the line of Keble "No distance breaks the ties of blood," and Bayard's well-known phrase "Our Kin across the Sea."

Messrs. L. C. Glad & Co. have sent us specimens of their tablets and powder for making rennet, curds and junkets. These preparations are specially made for use in hot climates, in preference to liquid rennet, as the substance keeps better in the solid form. Copenhagen butter and milk has such a good reputation, that we may be assured that the above preparations are of excellent quality. In this form they are admirably adapted for use in the hospitals and sick-rooms of India.

Order of Therapeutic Procedure.—In the volume already referred to, Dr. J. Mitchell Bruce remarks as follows:—"Never approach the treatment of a case without making a genuine effort to diagnose the pathological condition with which you have to deal Make a complete diagnosis of the case as distinguished from the disease: be prepared to treat the patient.

1. If the diagnosis has been reached, proceed as follows: Consider the course which the case may be expected to follow, and the complications which may be expected to arise.

2. Next review as methodically as possible the indications furnished by the aetiological, pathological and clinical facts as far as they are known.

3. Consider the order in which the indications are to be attended to, according to their importance.

4. Let well alone, that is, *do not interfere unless interference is definitely called for*; routine treatment for the sake of "doing something" is wrong It disturbs the natural course of the disease, confuses the diagnosis, and deprives the medical attendant of valuable materials for judging of the progress of the case for reaching a prognosis, and for indicating treatment when it really comes to be required. Unnecessary treatment is also often positively harmful. It sets up disorders in the body which are interpreted to be fresh evidence of the original disease and to call for further treatment A case of mitral disease is not to be interfered with, simply because a murmur happens to have been discovered; and if giddiness or palpitation occur, it probably calls for a dose of Epsom salts or reform of diet, not for digitalis and rest From a professional point of view, meddling interference may readily prove demoralising. At the same time it is not always easy to leave a case to spontaneous recovery. It takes a wise man to know when to hold his hand; and in treatment it is certainly a more severe test of judgment to deliberately do nothing than to do much. And the practitioner may be driven to interfere by the sentiments of the patient or more often of the patient's friends. 'Masterly inactivity' might beget want of confidence, an unfortunate and unfavourable position for the practitioner to occupy. The sensitive attendant, too, may be haunted by a want of confidence in his diagnosis and by an overwhelming sense of responsibility. He fears he may have missed 'something,' and he 'wants to give his patient every chance.' This is natural, but it is an evidence of lack of self-confidence and resolution, two essential qualities in the mental equipment of the practitioner. On the whole young practitioners are disposed to interfere too much and too often; to be over-diligent, to have too much faith in their remedies. After studying grave cases in hospital, they are not prepared for the considerable class of patients—mostly women who have no real structural disease, and they fail at first to understand and to manage them. These patients fear a 'young doctor' and with good reason. They are seriously treated with physic and may be seriously upset."

To Cure a Cold in the Head.—Dr. A. S. Barnes (*Interstate Medical Journal*, October) gives the following directions: Place the patient in a tub of warm water, the temperature being from 97° to 100° F., or as hot as he can stand it without inconvenience for five minutes. Then roll him in a warmed blanket and put him

in bed, heaping on covers. Something must previously be placed under the patient so as not to wet the bedclothes from the sweating. Next give one eighth of a grain of pilocarpin hydrochloride dissolved in one half glass of warm water. If the patient is weak or thin, less pilocarpine may be used. After three-quarters of an hour's sweating give the patient one one-hundredth of a grain of atropine in water. Fifteen minutes after this mop him without friction with warm towels (the Turkish being preferable) and put on him a warmed night robe, placing him between warmed sheets with his ordinary covering over him. Give the following prescription:—

| | | | | |
|----------------------------|-----|-------|------------|------------|
| B. Phenacetine | ... | ... | ... | 18 grains. |
| Salol | ... | ... | ... | 36 " |
| Caffeine citrate | ... | ... | ... | 4 " |
| M., ft. capsule xij. Sig.: | One | every | two hours. | |

Be sure and inform the patient that the dribbling from the mouth is the result of the medicine and will soon disappear.

If these directions, says the author, are carried out to the letter, there is no danger connected with this treatment, and this method will cure a cold more quickly than any other.—(*New York Medical Journal*).

A New Treatment of Tapeworm.—Kime (*Medicine*, Sept. 1899) says that failure to secure the head of a tapeworm is often due to the fact that the parasite is carried into the lower bowel and has time to re-attach itself before its body is expelled. He therefore ties the protruding part of the worm about three inches from the anus of the patient, and then injects half a grain of morphine directly into the substance of the worm. After a short time a large injection of water is given, and the upper portion of the worm will pass out motionless and apparently dead. Most tapeworms have a pair of longitudinal vessels extending from one extremity to the other, so that a substance injected into any segment will reach every portion of the parasite. An elaborate preparatory treatment is quite unnecessary. His patients do not eat breakfast, and about nine o'clock receive a dose of infusion of pomegranate or, what is far better, of pelletierin tannato with one or two drops of croton oil. The patient should remain in bed under observation for two or three hours until movements of the bowels occur. If the worm passes, well and good. If only a part protrudes, the morphine should be injected into the worm.—(*Practitioner*).

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs. Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs. Thacker, Spink & Co., Calcutta.

Annual Subscription to the *Indian Medical Gazette* Rs. 12, including postage.

BOOKS, REPORTS, &c., RECEIVED.

Indian Railway Statistical Report.

The Bengal Police Report for 1899.

Allbutt's System of Medicine, vol. viii.

Stonch. & Co.)

Eccles'. ill & Cox.)

Rough. K. Lewis.)

Text-book of Genito-Urinary Disease by Lydston. (F. A. Davis Co.)

Mitchell Bruce's, *The Principles of Treatment* (Young J. Pentland).

D. Walsh's X-Ray Case Note Book.

COMMUNICATIONS RECEIVED FROM:—

Surg.-Genl. R. Harvey, C.B.; Col. T. H. Hendley, C.I.E., I.M.S.; Lt.-Col. E. Lawrie, I.M.S.; Lt.-Col. A. Adams, I.M.S.; Jodhpur; Capt. S. Browning-Smith, I.M.S.; Chitral; Dr. K. N. Das, M.D., Calcutta; Major F. P. Maynard, I.M.S.; Ranchi; Sheikh Ahmed, Dapoli; Major C. E. Sunder, I.M.S.; Gaya; Messrs. Heatty and Gresham, Calcutta; Lieut. W. G. Liston, I.M.S.; Hingoli; Dr. J. N. Hendley, Purulia; Capt. L. Rogers, Muktesar; Major J. H. T. Walsh, I.M.S.; Capt. S. P. James, I.M.S.; Quilon; Professor Clifford Allbutt, Cambridge; Messrs. J. & A. Churchill, London; Major J. Smyth, I.M.S.; Capt. W. D. Sutherland, I.M.S.; Saugor; Asst. Surgn. A. C. Dutta, Chinsurah; Mons. le Dr. G. Apostoli, Paris; Mr. A. Powell, Cachar; Major D. G. Crawford, I.M.S.; Aden.

Original Articles.

KANGRI-BURN EPITHELIOMA IN KASHMIR.

BY ARTHUR NEVE, F.R.C.S., ED.

(*Kashmir Mission Hospital*)

EPITHELIOMA arising on skin surfaces, other than the neighbourhood of mucous membrane, is of rather rare occurrence in England. But in Kashmir the commonest seat of epithelioma is the skin of the thigh and the abdomen.

The cause of this is not far to seek. During the severe winters and indeed for a great part of the year, every Kashmiri man, woman or child carries a portable charcoal brazier under the loose gown which constitutes his or her only garment. When walking this hangs against the abdomen, when seated it is placed on the ground between the thighs. Slight burns frequently occur, and in very many people there is a mottling of the skin in the exposed parts.

The frequency of epithelioma may be judged by the fact that twenty cases of this kind were operated upon during June and July only. Probably two or three inoperable cases were seen in the same period.

Age.—It is difficult to ascertain the ages of our native patients, but it may be approximately stated that of the above, one was under forty, two under fifty, six under sixty, nine under seventy, two under eighty, and one above ninety.

Sex.—Most of the cases are males, fifteen out of twenty.

Region.—Nine occurred in the thigh, four on the abdomen, three on the lower part of the chest, two on the leg, one each on the back and hand.

The glands of the groin and axilla are often affected, and these constitute by far the gravest aspect of the disease.

Clinical appearances.—There may have been an ulcer or warty growth preceding the epithelioma, and such are often seen side by side with it. In either case the transformation to malignancy is indicated by a central ulceration, with foul discharge, an eversion and thickening of the edge.

In my last case the ulcer was only half an inch in diameter.

Another recent case had a horny tumour an inch in diameter, conical in shape, one edge of which was undermined, and examination by Stiles' method showed that the basement membrane was no longer intact, but the epithelial tissue had begun to invade the adipose tissue beneath. A special interest attaches to these marginal cases, which are not common, so it is

curious that only a few days later another horny tumour was seen in which the horny tissue was lifted and partly broken up by a mass of epithelial tissue, which also infiltrated the deeper structures. But the usual appearance is that of a foul, irregular, and somewhat raised ulcer, partly covered by sloughy detritus and crusts.

It may appear as a cauliflower excrescence of dusky granulations, or may be crater shaped.

When in the abdomen the excavation is likely to be deeper than when on the thigh, and when deep the glands are almost certain to be affected. The disease is often central, in which case both groins are apt to be infected, but when the epithelioma is situated above the umbilicus it is the glands of the axilla not of the groin which will be the site of secondary growths.

These gland tumours are usually brawny at quite an early period, and tend soon to break down and infiltrate surrounding structures.

Structure.—This is identical with that of epithelioma occurring in other situations such as the lip or scrotum. The epithelium of the adjoining skin dips down, proliferates, forms the familiar cell-nests, is itself invaded by connective tissue cells, which may form granulations on the surface. Even when fungating there is little tendency to bleeding, as the vessels are not numerous, on the contrary the smaller vessels are often occluded, and hence there is gangrene of superficial portions of the tumour. As the finger-like processes invade the deeper tissues they are surrounded and to some extent marked off from the healthy structures by connective tissue formation. It is comparatively seldom that the muscles of the thigh are involved, but in the abdomen the tendinous and muscular tissues soon blend with the epitheliomatous, and the parietal peritoneum is sooner or later infiltrated. In the chest too the early tendency to infiltrate is marked, and the periosteum of the ribs becomes involved, as in one of the cases under review.

As would be expected the secondary gland tumours occur most frequently in connection with epitheliomas of the ulcerative and infiltrating type, but the most harmless looking warty epithelioma may, as in a recent case, be the starting point of an inoperable glandular tumour. The infection is of course conveyed along the lymphatics, but it is seldom that the route can be traced by any line of shot-like deposits. And the rapid brawny infiltration sometimes met with in cases where the glandular growth is not broken down or very extensive is difficult to explain. Secondary deposits are seldom confined to one or two glands. The groin glands are affected in connection with either thigh or abdominal tumours, but clinically I have observed that the deeper glands within the abdominal cavity are more often enlarged in relation to thigh disease.

Treatment.—This may be summed up by the word operation. Some are inoperable, and one occasionally employs caustics in such cases. And of all the caustics I have used I regard formalin as the most powerful; but in the cases now under review the knife has been employed. It is usually a comparatively simple thing to remove the original tumour. The edge is sharply defined by the ulceration, and when examined, whether by Stiles' nitric acid method or by the microscope, it will be found that the epitheliomatous structure does not extend above a quarter of an inch beyond the apparent margin. Care has to be taken to cut wide of the roots in fascia or muscles, but these are usually well defined. When situated on the thigh unless the diameter exceeds three inches it will be found possible by tension to unite the skin; but the stitches will often cut out. This is the more often because there is great septicity to start with.

I have endeavoured in some recent cases to get a cleaner field for operation by thoroughly cauterising the ulcerating mass under chloroform with a red-hot iron, and then scrubbing the surrounding parts with antiseptics. This is a practical point of great value in other than epithelioma cases. It may not be possible to make the skin sterile in a few minutes, but much may be done to reduce its septicity, and by care the deeper portions of the wound may escape infection, in which case early union may save the subsequent breaking down of the skin incision. Button sutures are useful also. In the abdominal wall the constant respiratory movements are a further hindrance to immediate healing. It is usually easiest to unite the wound across the axis of the body, and a short splint or firm pad helps to restrain movement. A few vessels may require ligature, but when these are superficial I prefer to put on forcipressure for a few seconds, and then include the vessels in the skin sutures. Portions of the gracilis or adductor muscles have occasionally to be removed. In the abdomen the muscles tend to ulcerate away, and the peritoneum may be perilously near the surface and be wounded. This happened in one of my cases some years ago, and the tension on the sutures was such that firm union could not be obtained. It ended fatally by slow septic absorption from the peritoneal cavity. This has been the only fatal case on over three hundred operations for epithelioma performed by Dr. E. L. Neve or myself since 1890. But, as in other departments of surgery, successful operation does not ensure complete cure of disease. The great problem is not the removal of the original tumour but of the secondary glandular ones. Much has been written about the complete operation for scirrhus of the breast; Stiles and Watson Cheyne have done much to impress the immense importance of a complete eradication of the outlying glandular tissue, and

also of all the lymph glands of the axilla. Here too we are faced by the same problem, but the difficulties are even greater. The superficial glands of the groin may indeed be as easy of excision as axillary glands—not so the deeper glands surrounding the femoral sheath. The common femoral itself is not infrequently involved, and there are iliac glands which become infiltrated. The question is as to the legitimate boundaries of surgery. Butlin maintains that the operative surgery of malignant disease has, of late years, been pushed beyond reasonable limits. One thing is clear, namely, that when the groin glands are already visibly and extensively implicated, and especially when there is any brawny infiltration of the skin, it is too late to achieve a radical cure, and any severe attempts in that direction are misplaced. Speaking from recent experience in two of the cases now under analysis, a sweeping operation has failed to give any relief, but has appeared only to precipitate a general dissemination of disease in surrounding tissues. One such is still in the wards, in whom I attempted to extirpate the groin disease, removing the skin freely, and dissecting out the whole of the subcutaneous fatty and glandular tissue *en bloc* over an area eight inches long and five inches wide. I cleaned the sheath of the femoral vessels, and did not suspect any source of direct epitheliomatous infection of the wound. Yet already the most wide spread ulcerative disease is visible above and to the inside of the wound, which is nearly closed. In another recent case I removed all enlarged glands in both groins, secondary to an abdominal tumour, but within a few weeks other large glands with diffuse hardness made their appearance. Cure can only be expected where the disease is not already generalised in the lymphatics of the region. In some of the slow growing papillomatous type, many months or a year may elapse before the glands are effected, and if early removed the groin may be left untouched. Fortunately the least enlargement of the groin glands can be detected by careful examination. In the case of the thigh it is well to remove at least the superficial line of glands accompanying the saphenous vein, which will often be found thrombosed. And if one of these be found to react to the nitric acid method, it would then be well to proceed to clear the glands along the femoral sheath and those parallel to Poupart's ligament. Great care has to be exercised not to diffuse epitheliomatous cells by rough handling of the glands, or with the knife smeared by the cancerous juice.

Of the 20 cases there were glandular enlargements in six. It is doubtful whether any of these can be regarded as cured. There has certainly been recurrence in four already. This is a considerably higher rate of recurrence than I had observed when writing on the subject ten years

ago, perhaps because patients now return more readily for further operative treatment.

The statistics for a considerable period are as follows :—

From 1881 to 1889 there were 169 cases, of these two died, seven were partial operations, with but temporary improvement; 160 were entered as cured.

From 1890 to 1898 inclusive, there have been 316 cases, of which one died, seven were but temporarily improved, and 310 have been entered as cured. These figures do not give a true idea of the real mortality of the disease. There are the other cases regarded when first seen as inoperable, and treated by palliatives or caustics. Then the recurrences not seen by us or not registered must be numerous. This may be judged by the comparatively large number of gland operations during recent years. Thus, in the last two years, out of 70 operations there have been also 35 operations on the glands of the axilla or groin. Perhaps, in earlier years, many of these glands would have been left untouched. There is no reason to suppose that the type of disease is becoming more malignant.

To summarise our experience—

Kangri-burn cancer is a squamous-celled epithelioma of the skin. It occurs only on surfaces constantly exposed to great heat and to occasional burns.

Secondary gland infection is frequent, and is as malignant as other glandular epithelioma.

In the early stage the disease is localised, and a radical cure can be effected by free excision.

The permanent cures may be as high as 50 per cent.

When the glands of the groin are infected, complete removal becomes exceedingly difficult, and recurrences are frequent.

It is inadvisable to do very sweeping operations where the glands are extensively involved or the skin over them brawny.

The direct operation mortality on 485 cases has been only .6 per cent.

AN EXAMINATION OF 400 SLIDES OF NIGHT BLOOD FOR FILARIAL EMBRYOS.

By S. P. JAMES, M.B. (LOND.),
CAPTAIN, I.M.S.

IN collecting and examining the following specimens of blood I have had these three objects in view :—

1. To ascertain the prevalence and geographical distribution of the filaria sanguinis hominis nocturna in this part of India.

2. To ascertain whether the embryos of any other parasite than the filaria bancrofti could be found in the blood of inhabitants of Travancore.

3. To ascertain whether in a country such as Travancore where elephantiasis is endemic, the distribution of this disease and of the filaria sanguinis hominis nocturna corresponds.

The importance of the first two of the above points are obvious. The importance of the third lies in the fact that one of the chief reasons for regarding endemic elephantiasis as being caused by the filaria bancrofti (the name by which the parental form of the embryonic filariæ, which are found in the circulating blood at night, is known), is that, as far as has been ascertained, a corresponding distribution of elephantiasis and of the filaria exists. Up to the present, however, there are few published statistics from India with regard to this, and it is hoped that the following result of the examination of a number of slides from various parts of Travancore may be of use in adding a little to this important point in geographical pathology.

It is well known that in cases of true elephantiasis filaria embryos are rarely found in the blood, and from this it has been inferred that the filaria cannot be the cause of the disease, but, from the statistics which follow, it will be seen that this very absence of filaria embryos from the blood may be regarded as a strong proof that it is the cause of the disease.

The situations of the places from which the specimens of blood were collected are shown in the accompanying sketch map, and here I may mention that, though I have examined both day and night slides of blood from all these places, I have not yet been able to find embryos of any parasite except those of the filaria bancrofti (*viz.*, the filariæ nocturnæ), so that it is probable that other parasites, such as the filaria diurna, filaria perstans, &c., are not present at any rate in Southern India, which is the part of India where they would be most likely to be prevalent if present in the country at all.

Method of taking and examining slides.—All the slides of blood enumerated below were taken between eight o'clock at night and five o'clock in the morning in the following manner :—A finger of one hand having been thoroughly cleansed, a handkerchief or bandage is wound lightly round it and the pad of the finger is pricked with a clean needle. The drop of blood which appears is quickly transferred to a clean microscope glass slide by pressing the slide on the drop of blood. The blood is then spread out with the needle (before coagulation has taken place) in an even layer over an area of about $1\frac{1}{2}$ inches \times 1 inch. The slide is then covered up away from dust and allowed to dry, and labelled as follows :—*Name and age; native place; disease (if any); time of taking specimen; date.* For examination the slides are stained by placing them without previous fixing in a weak solution of fuchsin for about half an hour. They are then

washed and examined while wet without a cover glass with a two-thirds and one-sixth inch objective and a low eyepiece. The two-thirds inch objective is best for searching the field, the one-sixth being used when anything suspicious has been found. Slides were obtained and examined in the above manner from two classes of individuals, *viz.* :—

(i) Individuals not affected by elephantia-

sis, called below "healthy" individuals, though people suffering from other diseases than elephantiasis or an allied disease, *e.g.*, from leprosy, syphilis, &c., are included in this class.

(ii) Individuals suffering from elephantiasis, the following tables show the results obtained :—

Table I.—Slides of Blood from so-called "Healthy" individuals, i.e., those not affected by Elephantiasis.

| District. | Prevalence of Elephantiasis among the population. | Number examined. | Filaria Nocturna present in. | Percentage of filariated people among the "Healthy" population. |
|------------------------|---|------------------|------------------------------|---|
| Sherbully | 8 per cent. | 47 | 21 | 44·6 per cent. |
| Alleppey | 5 " | 39 | 11 | 28·2 " |
| Vaikam | 5 " | 23 | 3 | 13·0 " |
| Changanacherry | 1 per thousand. | 61 | 8 | 15·6 " |
| Mavalikeri | 3 " | 36 | 3 | 8·5 " |
| Quilon | 2 " | 62 | 6 | 9·6 " |
| Paroor | 4 per cent. | 2 | 1 | — |
| Shencottah | Nil | 52 | Nil | Nil |
| Trivandrum | Nil | 7 | Nil | — |
| TOTAL ... | | 319 | 53 | 16·6 % |

Table II.—Slides of Blood from individuals suffering from Elephantiasis.

| District. | Prevalence of Elephantiasis among the population. | Number examined. | Filaria Nocturna present in. | Percentage of Elephantiasis cases with Filariae in their blood. |
|-------------------|---|------------------|------------------------------|---|
| Sherbully | 8 per cent. | 24 | 1 | 4·1 per cent. |
| Alleppey | 5 " | 26 | 3 | 11·5 " |
| Quilon | 2 per thousand. | 23 | 1 | 4·3 " |
| TOTAL ... | | 73 | 5 | 6·8 % |

In addition to the above I have examined eight slides of night blood from natives of Cuttack, near Bherampore, where elephantiasis is also very common.

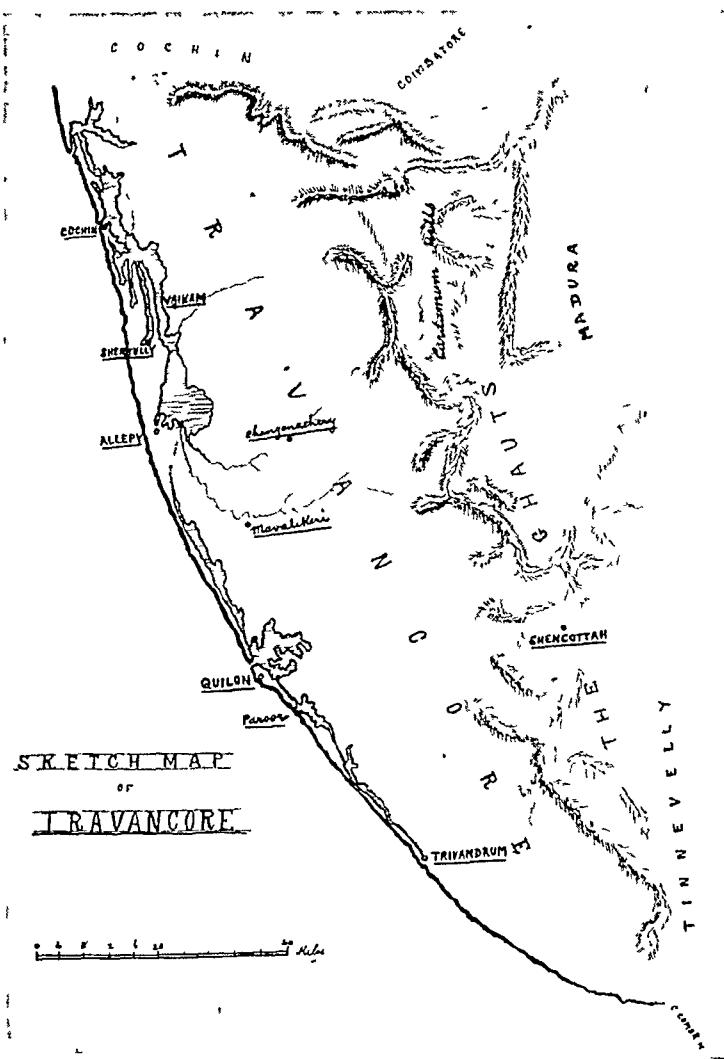
Three out of these eight slides contained the filariae embryos abundantly.

Remarks.—With regard to the geographical distribution and prevalence of the filaria nocturna in Travancore, if we compare the results of the above tables with the rough map, we see that this parasite is most prevalent along the succession of lakes and estuaries which run in a direction parallel with the coast. A narrow strip of land separates these "backwaters" from the sea into which they pour their waters by several outlets.

The country in the vicinity of these lakes is low-lying, waterlogged, marshy, and permeated with small streams and shallow tanks. The wells are few and shallow, and much of the drinking-water used by the natives is obtained from pools and streams. The rainfall is heavy, the mean temperature is high, and mosquitos abound. As one proceeds inland the type of country improves, and the prevalence of the filaria diminishes. Shencottah is separated from the rest of the country by a strip of forest and mountainous land.

With regard to the third of the objects which were kept in view in making this examination, *viz.*, the connection, from the point of view of their distribution, between this filarial parasite

AN EXAMINATION OF 400 SLIDES OF NIGHT BLOOD FOR FILARIAL EMBRYOS.



and elephantiasis, it is apparent, from the results above given, that as regards Travancore there is a remarkable similarity in their distribution.

Not only is the filaria present where elephantiasis occurs, and absent where there is no elephantiasis, but there is a correspondence between the prevalence of the filaria and the prevalence of elephantiasis in the districts. Where, for example, the percentage of elephantiasis cases among the population of a district is very high, there we find the percentage of filariated people among the "healthy" population to be also very high: where elephantiasis is less prevalent the filaria is also less common, and so on in a very apparent degree. It is not, however, possible to say that a definite ratio between the percentage of elephantiasis cases and the percentage of filariated individuals in any district exists. It is not necessary to detail again the results in Table I to show the truth of the above remarks; but with regard to the district of Vaikam, where though five per cent of the population are affected by elephantiasis only thirteen per cent. of the "healthy" population are filariated, I may mention that the reason that the proportion between the number of filariated individuals and the number of elephantiasis cases at Vaikam is not so high as it is at Shertully or Alleppey, is, that many of the elephantiasis cases at Vaikam are really natives of Shertully (which is close to it), who have gone to live at Vaikam after getting elephantiasis, on account of the great unhealthiness of Shertully.

Such a correspondence in geographical distribution as has been shown above, cannot but be looked upon as a proof that a causal relation between the filaria and elephantiasis exists; and Table II (slides from elephantiasis cases) affords confirmatory evidence of this.

The twenty-four elephantiasis slides from Shertully examined showed that in this district filariae are present in the blood in only about 4 per cent. of elephantiasis cases. Among "healthy" individuals of Shertully (including those suffering from any disease except elephantiasis) filariae are present in the blood in nearly 45 per cent.

Now, if some relation between the filaria and elephantiasis did not exist, we should expect to find it as frequently present in the blood of elephantiasis cases as in the blood of those not so affected, just as we find it as frequently present in cases of leprosy or syphilis as we do in people not suffering from those diseases. But if, on the other hand, it is the rule in a district that about forty out of every hundred so-called healthy people have filariae in their blood, and if, in the same district, it is the rule that only four out of every hundred elephantiasis cases have filariae in their blood, then it may be cer-

tainly inferred that a relation between the filaria and the disease exists.

The same line of argument, as above, may be applied to the results of the slides of blood from elephantiasis cases from the districts of Alleppey and Quilon enumerated in Table II.

The only other statistics bearing upon this point, of which I am aware, are those of Dr. Patrick Manson, who in seventy-four "healthy" people of Cochin found filaria nocturna embryos in twenty (a percentage of 27 per cent.). In fourteen elephantiasis cases he found filaria embryos present only in one (a percentage of 7·1 per cent.).

The fact that the majority of individuals who are the subjects of filariasis go through life without developing elephantiasis or an allied disease shows that some other potent cause must be present as well as the parent filaria to bring on an attack of elephantiasis. It is perhaps not an unimportant fact in this connection that in those parts of Travancore where elephantiasis is most prevalent, malaria is also very frequent and severe, and it is not impossible that repeated attacks of malaria occurring in a person already the subject of filariasis may be the determining factor in the production of elephantiasis or other elephantoid disease.

A NOTE ON SNAKES, SNAKE-BITE AND THEIR TREATMENT.

BY N. CHATTERJEE,
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CASE I.—P—, a sepoy, *æt.* 21, was bitten by a snake at night in his quarters while asleep. The snake was probably a krait (*Bungarus Cœruleus*) which was no doubt disturbed by a comrade who had come to deceased for a light.

Between 2 and 3 A.M., on 12th September 1899, deceased was found in his quarters by a non-commissioned officer to be suffering from faintness and much pain in his left leg which had become powerless. It was thought at first that deceased had been stung by a scorpion, and some household remedies were applied. Gradually when the breathing of the man became laboured and short, and his speech failed, he was brought to hospital where he was found to be in a moribund state. The tongue protruded and there was foaming at the mouth. There were some twitchings of the muscles of the left leg. No pulse at wrists, and heart's action was irregular and intermittent. Breathing stertorous, irregular and spasmodic. Deceased appeared to be in his senses as, though he could not speak, he pointed out the part of the leg where he was bitten, and two distinct marks (so . . .) were detected on the dorsum of the left foot near the root of the

great toe. He rallied but little under treatment and died at 6-45 A.M. in the Regimental Hospital.

Treatment.—Strong stimulants, injections of ammonia and liqr. potass. permang. heat, motion, sinapisms, &c., &c. A ligature was applied, but it was too late to have any effect.

CASE 2.—C, a sepoy, aged about twenty, was bitten *probably* by a krait (*Bungarus Cœruleus*) in the quarters of his comrade, where he had gone for a light in a half-sleepy state at about 2 A.M., on 12th September 1899. On coming back to his own hut, which he shared with another man, deceased said that he had been bitten by something, probably stung by a scorpion in his left leg. He rubbed some kerosine oil on the part and went to sleep again. He must have soon become unconscious, and at day-break he was found to be lying speechless on his bed, gasping and foaming at the mouth and groaning. He died before he could be brought to hospital. On examination a mark (so ●) and some scratches were found inside left leg.

Cause of death.—An opinion was given that both the above-named sepoys died of snake-bite, the snake was probably a krait (*Bungarus Cœruleus*). This opinion was based on the following grounds (1) Statements of the men themselves and their friends and comrades. (2) Absence of any other symptoms than those caused by snake poison. (3) The marks on the bodies.

The huts in which these men lived are the usual regulation huts. People not accustomed to them would find it difficult to see anything clearly in these huts even in broad day-light, and so it is not to be wondered at that nobody saw the snake on the night of the occurrence. A small and *ujla* (bright) snake, as some of the men said, had recently been seen in the locality.

CASES 3 & 4.—The following notes have been kindly supplied to me by a gentleman of this station.

"Extract from Diary re Death of two of my servants, dated July 19th, 1894. My bearer comes to tell me that my *khansamah* and head syce are both very ill with something like constriction of throat. On going out I find the *khansamah*, an old man, already dead, and the syce, a younger man, very ill but sensible. I at once go off for the Civil Surgeon, but arriving back I find the syce also dead. It appears that at 5 A.M., the old *khansamah* asked the syce, who was occupying the inside of the godown with his little girl (the old *khansamah* sleeping in the veranda) to take him outside to relieve himself as he was shivering and trembling. The syce did so, and the old man complained of a tightness in the chest and in the throat, but *no pain* anywhere. The syce then brought him back to his bed and he lay down there, and after a short struggle or two, he died as he lay there. The syce after that went to attend to his duties at the stable where my bearer

noticed a swelling in his throat. The man said he thought a fish-bone had stuck there, and he was recommended a remedy. Shortly after he complained of greater difficulty of breathing and went to lie down, when profuse perspiration came on, and after one struggle he also died. The Civil Surgeon's theory is that in both cases it was paralysis of the larynx caused by the bite of a snake, *probably* a small krait.

In both cases death was very sudden; the old man died soon after the syce brought him back, and the syce an hour or two later, being a younger and stronger man.

The full account as given by the syce is as follows:—The two men dined at 11 P.M. off fish-curry, which the syce's two little girls had already supped off at 8 P.M. After their usual smoke they went to sleep, the bearer having told the syce to wake him in the morning. The syce woke him at 5-30, and called his attention to the state of the old *khansamah*, who was then standing up in the veranda of his godown and complaining of tightness of the chest, pain in the throat and difficulty of breathing. He also complained of thirst and asked the syce to prepare him some tea. While the tea was being prepared the old man fell asleep, and half an hour afterwards he was dead. Just half an hour before he died, he asked the men attending him to see that he had a decent funeral, and about ten minutes before death he moved his arms and hands about his throat as if trying to remove some obstruction, and saliva bubbled like foam from his mouth. He died at 6-30 A.M. Then the syce, whose face my bearer had noticed when he first called him as being slightly swollen beneath the eyes, and who had thought that he must have had a fish-bone in his throat as he felt a slight pain in one side of the throat, complained of tightness of the throat and had to lie down with his head on one side, and a little water came from his mouth. He was perfectly sensible at the time, and on being told that the *khansamah* was dead, he struck his forehead with his hand, and he then fell asleep. Then he rolled over and struck his head on the floor. He then fell asleep again and alternately woke and fell asleep. Then he got up in a sitting position: then again slept; then had slight convulsion in his sleep: then he rolled over, struck his head again on the floor and, on turning over again, died. About half an hour before he died he asked that his children might be taken care of. He died about 7-45 A.M. It seemed now perfectly certain that they must have both been bitten by the same snake, *probably* a small krait. I have since heard of two cases in both of which the men didn't know that they had been bitten, and in both cases the men complained of sore-throats. In one case the man thought he had been stung by a mosquito. He was sent to hospital and died three hours afterwards.

None of the servants thought of a snake in the case of my two servants, nor apparently did the men themselves think of it.

The *post-mortem* on the two servants that I had held showed that there were no signs of arsenic in the stomach, the commonest poison in these parts; and the conclusion come to was therefore that the death of the two servants must have been due to snake-bite. From what I saw of the place where the men were sleeping, I should imagine that the snake bit the old man first, possibly on the sole of the foot, and then the younger man possibly on the same part. No puncture could be found, and it is very difficult to find one on a dark skin, but the examination for punctures was not very thorough as at the *post-mortem* the principal object was to test for arsenic."

The above is a true copy of the notes as I received them.

These and such similar cases of apparently mysterious deaths would cease to be mysteries if the commoner varieties of the poisonous snakes in India were better studied and understood. Surgeon-Major Nicholson, A.M.S., in his ophiology warns us "to believe nothing that you hear and only half what you see yourself," concerning snakes and yet even he has to rely on "good authority" for many important facts stated in his able work. The fact is snakes are rare. A European may live for ten years in India without seeing as many live snakes except in the hands of the jugglers, and if he wishes to study the subject he has to accept much of the results of other people's experience and observation.

The three commoner varieties of poisonous snakes are—(1) The cobra (*Naja Tripudians*); (2) the krait (*Bungarus Cœruleus* or *arcuatus*); and (3) The Daboia (*D. Elegans Russellii*). There are of course numerous other varieties of snakes more or less poisonous, but they all resemble the above-mentioned three, so far as their poison and its effects on the human body are concerned. For instance, the hamadryad is a ferocious snake but the poison is the same as that of the cobra.

The cobra is a retiring snake. Except during the rains when he is particularly lively, he shuns houses and noise of any kind. He makes his presence felt at the approach of any one. There is no mistake when a full-grown cobra bites, for it not only uses its poison fang but his ordinary teeth, and often there is a jagged wound at the bitten part. He usually empties his poison-bag at the first bite, sometimes breaking his fang or at least injuring it severely. The poison is considerable in quantity and the effect is almost immediate. In a very few minutes the person bitten may die. In the early seventies, when a medical student in England, I used to be told that a keeper of the London Zoological Gardens was accidentally bitten by a full-grown Indian cobra somewhere on the face. A gentle-

man who saw the occurrence at once drove him in his own carriage to the University College Hospital, but the man was dead before the House Surgeon saw him. Cobra poison, owing perhaps to the large quantity injected, produces much pain from the moment the person is bitten. A fair bite will kill a full-grown dog in five to sixty minutes. Half a grain of dry poison or about one and a half drop of fresh poison will have the same effect (Shortt). A man may live two to twenty-four hours according to the kind of the bite. A healthy European soldier died apparently in a little over an hour. (Annual Report of the 104th Regiment for 1862.)

The kraits are found everywhere in the house—in beds, in pots and pans, in the fissures of the walls, in the folds of a bed quilt, under a pillow, in one's slippers—everywhere and anywhere. Ophiologists say that a krait attains four feet in length but anything above two feet is rare. The last krait I killed was in my bed-room at Thayetmyo, Burma. The servants said they saw a snake as big as my walking-stick enter the room, but when killed and measured it was scarcely twenty inches. Owing to its peculiar colouring a krait looks bigger when scuttling away. A krait may bite a person when asleep or half-asleep. He may feel a stinging sensation and forget all about it. He may go on sleeping to rise no more. The krait is an extremely dangerous snake not because that its poison is more virulent than that of the hooded snakes but because it lives in our houses; its bite is comparatively painless; the effects of the poison are slow at least in the beginning; and because it is perhaps the only snake which has the opportunity of biting people on the head, chest, &c. A krait is not aggressive like a hamadryad. A krait may be hidden under the pillow without biting one. It may be found in the morning that one has slept with a krait for a bed fellow. It has not bitten because it was not hurt. Its poison fang is comparatively small even for its size, so that its bite is more like a sting. It injects only a small quantity of poison because its bite is that of a snake frightened by something and is done in self defence. A krait, hurt or frightened, will give a peck here and a peck there until it gets a final hiding place, and every bite will tell. This is why a krait may bite more than one person in the house all of whom may die, and so the snake gets the reputation of having a most virulent poison. As a matter of fact, a krait twenty-four inches long will have a poison bag not much bigger than the poison cell of a very large scorpion. A scorpion does not empty its poison cell with the first sting, neither does a krait. A krait has never been known to use its simple teeth. Krait bite is superficial; and if taken in hand at once the life of the person bitten may be saved. When a cobra or any of

the larger snakes bites a person, the snake is felt and heard if not seen. There is a hue and cry. Everybody within call is astir, and the snake is soon despatched. Not so with the krait. Hence I have never heard of an offending krait seen and killed. It is scarcely necessary to say here that the harmless *Lycodon Aulicus* is often mistaken for the dangerous krait.

The daboia is more common in Burma and Southern India. Size for size it has the biggest poison fang of all known snakes. It has also a large head and powerful jaws armed with strong simple teeth. It is a sluggish snake and will not bite unless provoked. A strong gunner (European) of a battery stationed at Thayetmyo died from the bite of a daboia under the following circumstances: "Soon after day-break as he was entering the fowl-house which is in close proximity to the barracks, he observed a dark thick-set snake of about two and a half feet in length (afterwards identified as a daboia); he took up a piece of bamboo and began teasing it, whereupon the reptile turned and bit him on the finger. The snake held on for a short time, and it was with some difficulty the man shook it off. * * * The man came at once to hospital, being advised by one of the comrades to do so, and when on the way he became very weak. The apothecary saw the patient on his arrival at hospital. It is supposed that a lapse of twenty minutes must have occurred from the time he received the bite until he reached the hospital, and nothing had been done meanwhile in the way of remedies. The apothecary immediately scarified the wounded finger freely, made the patient suck the wound and administered ammonia. For twelve hours no prominent symptoms appeared beyond swelling of the arm, restlessness and slight feverishness. Next morning he was found in a state of collapse, soon became unconscious and died twenty-seven hours after the bite" (NICHOLSON).

Now what is to be done in case any one is bitten by a poisonous snake. The circulation of the bitten part should be isolated if possible; the wound should be laid open freely and vigorously sucked; and it should be cauterized AT ONCE either by a hot iron, the explosion of gunpowder or a strong acid or alkali. It is no use inflicting this painful treatment unless it can be done immediately which is all but practically impossible (NICHOLSON). Stimulants should be given freely. Injections of ammonia and solution of permanganate of potash are advisable, the latter, having the reputation of neutralizing the poison, should be injected round about the bitten part which may also be constantly washed with it. Nicholson and Shortt did not obtain any satisfactory results from these injections and neither have I been more fortunate, owing perhaps to my never having seen a case in time. After the poison is fairly

in the system little can be done. The following points are in favour of recovery (a) The person may have been bitten through clothing. (b) The bite may have been a scratch rather than the strong and vicious bite necessary for the injection of poison. (c) The snake may not have been of a venomous kind (NICHOLSON).

Post-mortem examination reveals little or nothing. The signs are merely negative. When we consider the nature of the poison and the smallness of its quantity required to kill a healthy person this is not to be wondered at. Professor Busk says the effects of snake poison resemble those of prussic acid more than anything else. Snake poison is analogous to ptyaline of the salivary glands of mammals. It appears to leave no trace in the dead body. The blood has been found to be dark and fluid. Chemical analysis has revealed nothing so far as I know. Natives of India have an idea that birds and beasts will not touch the body of a person bitten by a snake. They (natives) also say that persons apparently dead from the effects of snake-bite may be brought back to life by hot baths, steam, &c. The bodies of cases 1 & 2 were eagerly waited for by the friends and relatives of the deceased, and handed over to jugglers who did all sorts of things including incantations, the whole performance lasting many hours, but I need scarcely add without any results. Knowing their superstition or prejudice I do not insist on *post-mortem* examination of the body of a native who dies of snake-bite, provided I am quite satisfied that it is really a case of snake-bite. This is a very important point to remember as we may hurt the feelings of friends and relations of the deceased for mere negative results.

There are many legends of wonder, fear and veneration inspired by snakes and snake-bitten people, but they are purely snake mythology and may be rejected as such by practical men.

A CASE OF SNAKE-BITE TREATED WITH CALMETTE'S ANTIVENINE.*

By G. W. BAKER,
MAJOR, I.M.S.,
Civil Surgeon, Gorakhpur, N.W.P.

MAHOMED HOOSAIN, aged about 56, resident of Mohulla Roygunj, Gorakhpur, a jemadar of chuprassis of the Commissioner, was brought to the hospital on the morning of 29th July 1898, at 7 A.M., having been bitten by a snake. His statement was that some time after midnight, estimated to be between 3 and 4 in the morning, he got out of bed to look round his house, as it was raining heavily. On putting

* Forwarded by the Director-General, I.M.S.

his left foot to the ground he felt himself tread on a snake, but he courageously kept it there, and subsequently killed the animal which was identified as a *Bungarus Cœruleus*, about two and a half feet long. On admission he was found to have the marks of two distinct bites close to the tendo Achillis.

Condition on admission.—Mind clear, complains of pain all over the body, with a sense of drowsiness. Conjunctivæ injected, pupils normal, marked ptosis, eyes could not be more than half-opened, sense of hearing dulled with tinnitus aurium.

7-10 A.M.—Hypodermic injection of gr. $\frac{1}{5}$ strychniaæ nitras.

7-20 A.M.—Condition unchanged. A second injection of gr. $\frac{1}{5}$ strychnine given.

7-45 A.M.—*About three hours after the bite*—Was given an injection of Calmette's antivenine of m. xv in the calf of the right leg. Ptosis increasing.

8 A.M.—Another antivenine injection of m. xv given.

8-30 A.M.—Seen by Civil Surgeon and 5 c.c. antivenine injected over left gluteal region. Eyelids more drooping, speech indistinct, but mind unaffected; slight feeling of intoxication; no salivation. At 9-15 A.M. complained of a choking sensation, and vomited some thick, stringy mucus. Breathing becoming laboured. Pulse 84, regular.

9-20 A.M.—Another 5 c.c. antivenine injected.

9-55 A.M.—2 c.c. antivenine injected.

10-45 A.M.—Symptoms progressive. No amelioration; rattling in throat from breathing through inspissated saliva.

Another 2 c.c. antivenine injected; soon after the last injection the respiration ceased, and artificial respiration was resorted to with subcutaneous administration of sulphuric ether. Pulse became palpable at wrist, 120, and breathing was restored, but slow and shallow.

11-10 A.M.—3 c.c. antivenine injected. No appreciable improvement. Cold perspiration and lividity of extremities noticed.

11-20 A.M.—Worse; sun apism to praecordium and further artificial respiration.

11-45 A.M.—Died eight hours after being bitten and four after the first injection of antivenine. It is to be regretted that the initial dose was not larger, and the treatment adopted was not commenced earlier; but the directions accompanying the antivenine were in French,* a language the Assistant Surgeon, who first saw the case, did not understand.

In all some 20 c.c. of Calmette's antivenine were injected.

It cannot be said that the smallest improvement followed the administration of the anti-

venine. Before the first injection, however, the symptoms of poisoning had declared themselves, and the constitutional disturbance was profound. Whether or not the antitoxin would exercise a prophylactic effect if administered simultaneously with or immediately after a bite, can only be proved experimentally in natural cases. The curative properties of the serum, when poisoning is in progress, I suspect to be little or *nil*, and this must prevent the treatment becoming really practically beneficial to the community at large.

A CASE OF SNAKE-BITE TREATED BY ANTIVENINE: RECOVERY.

BY H. G. L. WORTABET, M.D.,

L.T.-COL., I.M.S.,

4th Lancers, H. C.

ABOUT a year ago I met in Bombay a French gentleman who had just arrived in India and had in his possession some of Calmette's antivenine. He very kindly gave me a phial containing a dose of 10 c.c. which I put aside for use when occasion presented itself. On the 17th October 1899, at midday, a trumpeter of the 4th Lancers, H. C., was walking through high grass, at a distance of some 500 yards from the lines, when he felt something prick or sting his foot. He looked at his foot and found over the instep a drop of blood which he at first attributed to the prick of a *babul* thorn, there being a number of acacia trees in the vicinity. In a few minutes, however, he began to feel giddy and to lose power in his legs, which symptoms made him suspect that he must have been bitten by some venomous snake. He accordingly walked home with some difficulty, and on arrival at his hut told his wife that he was feeling very unwell, and that he suspected that he had been bitten by a snake. In order to verify this he was given a few *neem* leaves to chew, it being the belief amongst natives of this part of India that a person suffering from snake poisoning cannot detect the bitter taste of the *neem*. The trumpeter having chewed the leaves and found them tasteless, his friends came to the conclusion that he had been bitten by a snake. If there is any ground for this belief, it may be due to the loss of taste through paralysis of the terminal filaments of the gustatory nerve. Shortly after he broke out into a profuse perspiration, vomited twice, and became more or less unconscious. The hospital dooly was sent for, and he was conveyed to hospital, arriving there at 12-30. The patient could not walk to his bed and being semi-comatose answered questions only when loudly spoken to. The Hospital Assistant on hearing the account of his illness, injected him with five

[* The wrapper surrounding the bottle contains printed directions in English as well as in French.—ED., I. M. G.]

minims of liqr. strychnine, and gave him half an ounce of brandy by the mouth. I was sent for shortly after and saw the patient at 1-15 P.M. He was half conscious, and when I spoke to him in a loud voice he could answer questions. The pulse was 78; but very weak, and the pupils were widely dilated. On examining the seat of injury, a small clean incision about $\frac{1}{8}$ th of an inch in length was readily detected immediately over the instep of the right foot, a dry clot being visible adhering to the edge. About half an inch below the first incision, a small abrasion of the skin could be easily seen. There was considerable swelling of the whole foot.

The Colonel of the Regiment, whom I had met on my way to hospital and whom I had informed of the case, had come over with me to see the trumpeter and verified the local injury. A second dose of liqr. strychnine and 20 minims of brandy were injected at this stage, but as the patient grew worse I decided to use the antivenine. Not having a syringe that would hold the 10 c.c., I was obliged to employ an ordinary hypodermic needle and consequently made no less than 10 or 12 injections, most of which were into the basilic and cephalic veins of both arms, and the rest into the flanks of the abdomen and the injured limb above the ankle. Naturally in charging the syringe so frequently there was a loss of several minims of antivenine so that the patient could not have received more than 8 or 9 c.c. out of the 10. Almost immediately after, the patient opened his eyes and said in Urdu "that is a good medicine you have given me." He also recognised the colonel and attempted to sit up to salute him. At 2-45 his pulse was 100. Respiration, 20; temperature, 99°. He had vomited twice before the injection of the antivenine, the substance brought up consisting principally of *däl*, but at the second effort the food was slightly stained with blood. At 2-30, he vomited again, on this occasion a considerable quantity of blood and mucus being brought up. At 4-20, pulse was 102. Respiration, 22; temperature 99°. His condition improved gradually, and he had snatches of sleep at intervals, answering when spoken to, otherwise lying on his back with his eyes half closed. The swelling of the foot increased towards the evening, and he complained continually of burning pain at the seat of injury. He vomited periodically the water he drank, but he did not bring up any more blood. Bovril and milk he could not retain. He passed a restless night, owing chiefly to the burning pain in his foot. On the following morning (18th October) his temperature was normal, pulse 80, weak and compressible. Respiration, 22. The swelling of the leg had extended up to the calf, the stomach remained very irritable, as he could not retain the

milk and broth on which he was fed. By 3 P.M. his pulse had become so weak that it could not be felt, the patient was also restless, continually attempting to rise from his bed. No doubt this condition was as much due to exhaustion from a want of nourishment as to the poisoning. Failure of the heart was thus threatening, and it became necessary to have resort to cardiac tonics as well as general stimulants. Accordingly at 3-20 P.M., 5 minims of liqr. strychnia were injected hypodermically, and 20 minims of tinct. digitalis were given by the mouth. No improvement having taken place an hour later (4-15 P.M.), the strychnia was repeated, and 15 minims of tinct. digitalis were likewise injected hypodermically. At 4-30, he vomited. At 5 P.M., he received another dose of liqr. strychnia by means of the syringe. At 5-45, 30 minims of brandy were injected hypodermically. At 6-30, no pulse could be felt. Respiration was 30; temperature, 100·6. At 6-45, he vomited. Five minims of liqr. strychnia were injected at 7 P.M., and at 7-30, 20 minims of brandy. The patient though conscious was restless, and frequently attempted to sit up; the conjunctivæ were injected. All this time the pulse could not be felt. At 8-30 P.M., 15 minims of tinct. digitalis were injected hypodermically. From 9-30 P.M. onwards, the following plan was adopted. Five minims of liqr. strychnia, 20 minims of brandy and 15 minims of tinct. digitalis were injected alternately in the above order, every hour during the night. His pulse remained imperceptible; his temperature when taken varied between 100·2 and 100·4. A slight quantity of milk and broth was retained during the night. At 4-40 A.M., on the 19th October, i.e. after 13 hours the pulse began to become perceptible to the touch but could not be counted. At 5-30 A.M., with severe difficulty, it was made out to be 100. At 7 A.M. it was 128. Respiration, 24. Temperature, normal. Hypodermic injections from hence were less resorted to. At midnight, vomiting had subsided. The bowels had acted once in the morning, and urine of high colour had been voided at intervals in small quantities. Partly owing to the restlessness of the patient, the swelling of the leg had increased considerably and had reached the knee, burning pain in the foot still being complained of. On the 20th October, the cardiac action was stronger and he obtained snatches of sleep, though still somewhat restless. Edema of the dorsum of the foot and over the ankle was very marked. The skin also pitted on pressure along the shin. In the forenoon, he suffered from epistaxis, and the conjunctivæ were injected. In the afternoon, he bled from both nostrils. On the 21st October, the motions which had hitherto shown no traces of blood were seen to consist of scybala mixed with shreds of mucous membrane

and dark coloured blood. Hæmorrhage from the bowel having taken place. The swelling of the leg was found to have extended up to the thigh.

22nd October.—He suffered from epistaxis again, and the stools contained shreds of mucous membrane and traces of blood. After this the stools lost their abnormal character, and there was a general improvement. By the 7th of November, the swelling of the leg and foot having entirely subsided, and the patient having regained power in the limb, he was discharged.

REMARKS.

1. Although the snake was not seen, the history of the case and the symptoms (especially the hæmorrhage from the mucous membrane of the nose, stomach and bowels) leave, no doubt, that the man was bitten by a venomous snake.

2. There is good reason to believe that the antivenine averted an immediately fatal result, and had the patient received the full dose of 10 c.c. the cardiac failure, which was so prominent a feature in the case, might have been prevented.

3. Cardiac failure occurs, however, in cases of snake poisoning, although antivenine may have been employed. In this case, as well as in one recently reported by Dr. Beveridge of Coorg (vide *B. M. J.*, 23rd December 1899), it was necessary to resort to cardiac stimulants and tonics. Two years ago my *mali* was bitten by an young Russell's viper, whilst I was seated close to him in the verandah. He was removing a flower pot when he felt the bite, and on looking for the snake it was found two feet from the place where he was standing. Another *mali*, who was helping him at the time, was made to suck the wound, and a ligature was placed above the incision made by the fangs. Liquefied strychnia and brandy were injected hypodermically, and ammonia, brandy and bovril were administered by the mouth. The patient was out of danger by the evening, about 6 hours after having been bitten. He suffered from the usual local and general symptoms. Swelling of the leg from cellulitis kept him in hospital for ten days.

It might be inferred from the above case that cardiac and general stimulants effected a cure. Had the snake been a full grown one, however it is doubtful, whether the man would have recovered without a dose of antivenine. The physician should always be prepared in these cases to meet threatening cardiac failure with cardiac and general stimulants.

4. A protracted recovery is to be expected in some cases, especially in those in which extensive cellulitis develops as a result of the local injury.

ON THE USE OF CINCHONIDINE SULPHATE IN REDUCING THE PREVALENCE OF 'FEVER' CASES IN JAILS.

By F. P. MAYNARD, M.B., D.P.H.,
MAJOR, I.M.S.,
Civil Surgeon of Ranchi.

AN experimental prophylactic issue of cinchonidine sulphate was made by me as Superintendent of the Hazaribagh Central Jail to the prisoners in 1899 in the manner and with the results given below.* It must first be mentioned that the Hazaribagh plateau (2,000) is by no means so free from malaria as is supposed by some people. Quartan and tertian, and particularly double tertian fever are common, and the malaria parasite is easily detected in these cases. Enlargement of the spleen and malarial cachexia are common, and are met with in quite as severe a degree as in any cases I have seen in Burdwan or Nuddea. The Hazaribagh Central Jail is the convalescent jail for the unhealthy districts of Bengal, and contains on an average 300 sick and infirm prisoners who have been sent up there from unhealthy jails for the benefit of their health. The majority improve rapidly, and no doubt many lives are saved by the system. The way enlarged spleens from malarious districts practically disappear within a few months after transfer is very remarkable. On the other hand, men coming to the jail free from spleen sometimes develop it, and in the adjoining Reformatory School I found twelve boys with enlarged spleen (palpably so) who had been quite free from it on admission some months or years previously. This interesting fact, *viz.*, that in the same place under the same conditions some persons can have their large malarial spleens reduced to normal, while others develop them, points like many other facts to essential differences between the parasites producing the different forms of malaria. In Lower Bengal the infections are nearly always mixed, the clinical course irregular, and the parasite difficult to find.† Such cases improve in Hazaribagh and lose their spleens. In

* To speak of cinchonidine or quinine being used for their *prophylactic* effect is a mistake in terms however. These drugs do not prevent malaria in the sense that they prevent infection, as boiling drinking water may prevent infection by entozoa for instance, but they exert an injurious influence upon the malaria parasite during its development and help to make man more resistant. The sources of infection in malaria are probably manifold, but none of those known to us could possibly be prevented by the most liberal use of quinine. It is only of use as far as we know in stopping the course of the disease in a person already infected. The amount of infection and the action of cinchonidine in modifying its results are of importance therefore, and for this reason stress has been laid in this paper upon the reduction of the severity as well as the frequency of the fever cases effected by cinchonidine.

† See 'Notes on the Examination of Malarial Blood' by Surgt. Capt. F. P. Maynard, I.M.S., in *Indian Medical Gazette*, Vol. XXX, 1895, p. 412.

the district itself, however, the infections are generally simple, the clinical course regular and the particular parasites easily found.

On July 24th, 1898, the prophylactic issue of the following daily dose was begun—

| | |
|--------------------------|----------------|
| Sulphate of cinchonidine | ... gr. vi |
| Sulphate of iron | ... gr. ii |
| Dilute sulphuric acid | .. m. x |
| Gur | ... gr. xx |
| Water | ... 3 <i>i</i> |

In order to determine the value of the drug in preventing fever, the prisoners were divided up into a cinchonidine gang, and prisoners not receiving cinchonidine. The former were chosen from the various work gangs, special gangs and convalescent gang, and included nearly half of each so as to have A. and B. class prisoners, living and working as much as possible under the same conditions, some getting and some not getting cinchonidine. A daily average of 349 prisoners received it, and 517·7 did not receive it. The under-trial, newly admitted segregation, female and hospital prisoners did not receive it. The cinchonidine gang remained the same as far as possible throughout the experiment, and patients on discharge from hospital were returned to the gang they were in previous to admission. A nominal roll was kept of all the prisoners getting the issue, the word '*cinchonidine*' was written in red ink on their history tickets, and the letter 'C' stamped on their wooden neck-tickets. The issue was made daily at a parade before the mid-day meal, the dose being poured into each prisoner's mouth by the medical subordinates out of tin measures with long handles. When given after a meal the mixture was found to sometimes cause vomiting and loss of food. Before the issue the civil hospital assistants checked the prisoners present in the special enclosure, and it was not begun until all were present. A careful record was kept in a special hospital register of all cases of fever coming to hospital, and the fact of their coming from the cinchonidine gang or otherwise verified and noted. If the "fever" turned out eventually to be due to some other disease the cases were of course excluded from the results.

In this way cases of pneumonia, mumps, phthisis, etc., were excluded. In these ways every care was taken to make the experiment reliable, and civil hospital assistants Indu Bushan Dutt, Hari Charan Sil and Gobind Chandra Misra, and compounder Nurul Hussein deserve credit for the care they took in carrying it out.

The first issue was made from July 24th to September 24th, but the figures of admission and observation of 'fever' cases refer to the period August 1st to September 30th. This has been done to allow for the drug taking some days to produce its effect, and for its effects lasting some days after its issue has been stopped. No attempt has been made to ascertain what the results would have been had the cases been collected during exactly the same period as the issue, viz., from July 24th to September 24th. The issue was stopped between September 25th and October 15th, but was begun again on October 16th and continued until November 4th, when it was finally stopped. The second issue was given chiefly to those prisoners who had not received it during the first period. The experiment embraces therefore three periods (i) First issue, July 24th to September 24th (cases being recorded August 1st to September 30th); (ii) intermediate period, September 25th to October 15th (no issue—cases recorded October 1st to 22nd); (iii) second issue, October 16th to November 4th (cases being recorded October 23rd to November 11th).

The accompanying Tables A. B. & C. give the results which show as far as they go that cinchonidine does act as a prophylactic against 'fever.' The season was not a very feverish one in the Jail and Reformatory, though there was a good deal of fever in the town, and perhaps a more unhealthy year would furnish more striking results. In considering the influence of the drug upon the prevalence of fever the cases met with may be considered as regards their frequency, type and severity. The frequency is shown in the tables. In A. (the first period) it will be seen that while only 7·73 per cent. of those receiving cinchonidine were attacked by fever, 12·94 per cent. of those not getting it

TABLE A.

Results of first period—August 1st to September 30th.

| Prisoners receiving cinchonidine=349. | | | | Prisoners not receiving cinchonidine=517·7. | | | |
|---------------------------------------|--------------------|--------------------------------------|------------|---|--------------------|--------------------------------------|-------------|
| Admissions. | | Slight cases under observation only. | Total. | Admissions. | | Slight cases under observation only. | Total. |
| Remittent type. | Intermittent type. | | | Remittent type. | Intermittent type. | | |
| 8 | 7 | 17 | 27 | 10 | 17 | 40 | 67 |
| 2·85 p. c. | | 4·88 p. c. | 7·73 p. c. | | 5·22 p. c. | 7·72 p. c. | 12·94 p. c. |

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were attacked. It was only necessary to admit for 'fever' 2·85 per cent. of those getting the drug (of whom 30 per cent. suffered from a remittent type), while 5·22 per cent. of those not getting it had to be admitted (of whom 58·8 per cent. showed a remittent type). The percentages coming under observation only, and being mild cases therefore, were 4·88 and 7·72 in the two classes respectively, so that both severe and mild cases of fever were more numerous among the prisoners not getting cinchonidine. When the individual cases were investigated it was found that their severity in the latter class was also greater whether judged by the temperature or by the number of days that admitted cases stayed in hospital. This was seventeen days compared with 12·4 days in the case of those who had taken the drug.

TABLE B.

Results of intermediate period—October 1st to 22nd.

| Of those who had previously been receiving cinchonidine =349. | | | Of those who had <i>not</i> previously been receiving cinchonidine =517·7 | | |
|--|--------------------|------------|--|--------------------|------------|
| Admissions. | Observation cases. | Total. | Admissions. | Observation cases. | Total. |
| 8 | 5 | 11 | 10 | 9 | 19 |
| 1·72 p. c. | 1·43 p. c. | 3·15 p. c. | 1·93 p. c. | 1·74 p. c. | 3·67 p. c. |

This table shows that the issue being stopped the proportion of cases coming from the two classes of prisoners became more equal, 3·15

TABLE C.

Results of second period—October 23rd to November 11th.

| Prisoners receiving cinchonidine=480·30. | | | Prisoners <i>not</i> receiving cinchonidine=422·35. | | | | |
|--|--------------------------------------|------------|---|--------------------------------------|------------|----|----|
| Admissions. | Slight cases under observation only. | Total. | Admissions. | Slight cases under observation only. | Total. | | |
| Remittent type. | Intermittent type. | | Remittent type. | Intermittent type. | | | |
| 4 | 6 | 2 | 12 | 2 | 6 | 11 | 19 |
| 2·08 p. c. | 2·54 p. c. | 5·62 p. c. | 1·89 p. c. | 2·61 p. c. | 4·50 p. c. | | |

per cent. of those who had previously received the drug being attacked (1·72 per cent. admitted) compared with 3·67 per cent. of those who had not taken it (1·93 per cent. being admitted). The severity therefore as well as the prevalence of fever became more uniform when no issue was made.

Table C. shows the results following the second issue and is subject to different interpretations. It would have been better perhaps for the purpose of the experiment to have continued the issue to the same prisoners as at first, but, believing as I did in the value of the drug being proved by the first series, I thought it only right to give it to those who had not had it before, and hoped that even so some interesting results might be obtained. The net result was that those prisoners who did receive cinchonidine in July-August, and did not receive it in October-November, gave a rather lower rate of fever cases than those who went without in the former period and got it in the latter. This result, if worth anything at all, would seem to imply that the value of cinchonidine is greater when given about the time that infection is supposed to occur—July and August,

and that its effects last a fair time. On the other hand, Table B. rather shows that the effects were not very lasting as the proportion of cases soon became equal when the issue was stopped. Further experiments on a larger scale are required to determine how long the effects last.

No ill-effects from the drugs were met with. There were indeed remarkably few bowel disorders during the months of issue, even when compared with the record healthy year 1898 as the following table shows:—

| | Dysentery admissions. | | Diarrhoea admissions. | |
|---------------|-----------------------|------|-----------------------|------|
| | 1898 | 1899 | 1898 | 1899 |
| July ... | 18 | 14 | 15 | 7 |
| August ... | 34 | 9 | 6 | 1 |
| September ... | 12 | 9 | 4 | 1 |
| October ... | 8 | 5 | 3 | 6 |
| Total ... | 72 | 37 | 28 | 15 |

The same dose was issued in 1898 to most of the prisoners from July 15th to the end of November with four short breaks.

In the two years there have only been one death from dysentery and two from diarrhoea. Part of the credit for these results may fairly, I think, be put down to the use of sulphuric acid and sulphate of iron with the cinchonidine.

Conclusions.—(1) Cinchonidine sulphate does act as a prophylactic against 'fever' when given in daily doses of six grains; (a) the frequency of the 'fever' cases is reduced: more than $1\frac{1}{2}$ times as many (7·72 : 4·88) cases of 'fever' came to hospital from those not receiving the drug, as from those getting it; (b) the severity of the cases is less: the proportion of cases admitted to hospital was nearly twice as great (5·82 : 2·85), and the proportion of admissions for remittent types was also nearly twice as great (58·8 : 30) among the prisoners not receiving cinchonidine while their stay in hospital was decidedly longer. (2) Given in combination with dilute sulphuric acid and sulphate of iron the mixture has a useful effect in reducing the number of cases of diarrhoea and dysentery among the prisoners.

REPORT ON MALARIOUS FEVER FOR THE MONTH OF DECEMBER 1899.

BY EDWARD LAWRIE, M.B.,

LIEUT.-COL., I.M.S.,

Residency Surgeon, Hyderabad, Deccan.

THE report for December 1899 has been put together, as usual, by Dr. Evans. The number of cases of fever treated at the Residency Hospital during the month of December was sixty-four. This shows a decrease as compared with the two previous months, for which the figures were 107 for October, and 82 for November. There was also a decrease in the number of cases in which Laveran bodies were found. The blood contained these bodies in 38 of the fever cases, while in 26, or 40·6%, nothing abnormal was discovered. Only one case of malarious fever was admitted into the hospital, and the sole points of special interest during the month were (1) the comparatively large number of cases of fever in which the quartan form of the Laveran body was met with in the blood, and (2) the small number of the so-called aestivo-autumnal cases. As in the previous two months the diagnosis of the type of the fever was made in the first instance from the microscopic examination of the blood alone, and the cases have been tabulated in the same way as was done in November. The usual tabulated and photographic statements are appended. During December the so-called quartan "parasite" was found in thirteen cases of malarial fever, but the

fever was actually quartan in four cases only out of the thirteen; in the remaining nine it was either quotidian (4), irregular (3), tertian (1), or not known (1). The following tables show, A, the clinical type of the cases of fever treated at the Residency Hospital during December, and B, the total cases for November and December, with the kind of Laveran body present in the blood, and they have a very important bearing on the question of the scientific value of the microscope in the diagnosis of malaria and of the type of fever.

A. TABLE I. December 1899.

| Clinical type of fever. | Number of cases. | KIND OF LAVERAN BODY PRESENT IN THE BLOOD. | | | | | | No Laveran bodies found in the blood. | |
|----------------------------|------------------|---|----------|-----------------------|-------------------------|--------------------|--------|--|--|
| | | SIMPLE. | | AESTIVO-AUTUMNAL. | | | | | |
| | | Simple tertian. | Quartan. | Malignant tertian. | Malignant quotidian. | Crescents only. | Mixed. | | |
| Quotidian ... | 35 | 4 | 4 | 4 | 4 | 0 | 0 | 19 | |
| Tertian ... | 8 | 3 | 1 | 1 | 0 | 0 | 2 | 1 | |
| Quartan ... | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | |
| Irregular ... | 10 | 1 | 3 | 0 | 1 | 1 | 0 | 4 | |
| Continuous ... | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | |
| Not known ... | 5 | 0 | 1 | 2 | 1 | 0 | 0 | 1 | |
| Totals ... | 64 | 18 | 13 | 7 | 7 | 1 | 2 | 26 | |

Percentage of cases in which no Laveran bodies were found in the blood 25·6.

B. TABLE II. November and December 1899.

| Clinical type of fever. | Number of cases. | KIND OF LAVERAN BODY PRESENT IN THE BLOOD. | | | | | | No Laveran bodies found in the blood. | |
|----------------------------|------------------|---|----------|-----------------------|-------------------------|--------------------|--------|--|--|
| | | SIMPLE. | | AESTIVO-AUTUMNAL. | | | | | |
| | | Simple tertian. | Quartan. | Malignant tertian. | Malignant quotidian. | Crescents only. | Mixed. | | |
| Quotidian ... | 89 | 15 | 5 | 20 | 8 | 7 | 4 | 30 | |
| Tertian ... | 17 | 8 | 1 | 2 | 0 | 1 | 2 | 3 | |
| Quartan ... | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | |
| Irregular ... | 15 | 2 | 4 | 1 | 1 | 1 | 0 | 6 | |
| Continuous ... | 9 | 1 | 0 | 2 | 2 | 1 | 0 | 3 | |
| Not known ... | 10 | 0 | 1 | 3 | 1 | 0 | 0 | 5 | |
| Totals ... | 146 | 26 | 17 | 28 | 12 | 10 | 6 | 47 | |

Percentage of cases in which no Laveran bodies were found in the blood 32·3.

Out of eighty-nine cases of quotidian fever treated during November and December, in no less than thirty there were no Laveran bodies at all in the blood. In thirty-five the Laveran body was of the tertian type, and the fever ought to have been tertian instead of quotidian. In five of these cases of undoubted quotidian fever the Laveran body was quartan, in four mixed, in seven there were crescents only—which the plasmodists assert do not produce fever*—and in eight alone of the eighty-nine examples of quotidian fever was the “parasite” of the true quotidian type. But if the microscope is untrustworthy, it is no less certain that the statements of patients must be accepted with great caution. In one of the cases in which the quartan form of the Laveran body was found in the blood, the patient stated that he had had fever for seven months regularly, always after a two days intermission, i.e., true quartan fever. He was admitted into the hospital, and no quinine was given, but his temperature was taken in the rectum every hour. The fever was then proved to be continuous and not quartan. At the same time it was discovered that the patient had not the smallest intention of deceiving, as he had no idea when he had fever and when he had not. A similar case was met with in the wards a few weeks before—when a malarious patient declared he was quite well and had no fever, even when his temperature was 100°.

It is clear then that the microscope cannot be depended on any more than the statements of patients in the diagnosis of the type of the fever in malaria, and that the thermometer alone affords the exact information required. The matter is one of little importance however, for, when once a fever is diagnosed to be malarious, no matter what its type may be quinine must be given; and there are very few patients, even in a hospital, who will willingly allow the physician to make thermometric observations for days before beginning treatment in order to determine accurately the type of the fever. Again, there are many cases of malarious fever, especially among those in which there are no Laveran bodies in the blood, in which the exhibition of quinine constitutes the only means at our command of clinching a diagnosis.

In the report for October 1899 examples were given of the usefulness of the microscopic examination of the blood in diseases such as pneumonia complicated by malaria, and in the acute inveterate fevers with hyaline bodies in the blood. To these must now be added those forms of malarious fever where Laveran bodies persist, and are found in the blood long after the fever has disappeared. In cases of this kind

the microscope is of use in demonstrating that the exhibition of quinine should not be discontinued, in spite of the absence of fever. But, *per contra*, its clinical value is discounted in these cases by the fact that fever patients soon get tired of having their blood examined after they feel well again, and refuse to have it done. The present position therefore of the malaria question appears to be as follows. While the microscope possesses a certain scientific value in malaria, which is still indefinite, there is no doubt that it has acquired a very distinct commercial value in the profession; indeed Ross has gone so far as to state* that “the success of Imperialism in the coming century will depend largely on the microscope in malaria,” notwithstanding that the science of malarial parasitology has been proved to be founded almost exclusively on assumption and not on fact:—

“ ‘Tis all he needs : he is content with these :
Not Facts he wants, but soft Hypotheses
Which none need take the Pains to verify:
E.g., the theory of Anopheles.”

The case which will be of the greatest interest to plasmodists, No. 65 in the tabulated list, is one in which we have given photographic diagrams alone of the kind of Laveran body found in the blood without any description. We shall take it as a great favour if experts on the malaria question all over the world will forward their opinions—based on the photographs, regarding the fever and the type which it ought to present to the editor of this journal, to whom all the known facts concerning the case have been forwarded in a sealed cover. When all the opinions have been received the cover can be opened, and the facts published along with the opinions of the experts.†

There is no report to make this month on the laboratory experiments connected with malaria, as none could be completed. Several experiments with pigeon ticks are going on; and at the beginning of the month attempts were made to keep up those with mosquitos to which reference has been made in a previous paper. But the right kinds of mosquitos were difficult to find, and it was impossible to keep them alive for more than one or at most two days. We have therefore for the present been reluctantly obliged to abandon these experiments.

We have been asked to state that the pamphlet entitled “Medical and Sanitary Reform in India,” can be obtained from Messrs. Thacker, Spink & Co., for two annas to cover postage. The author invites criticisms, which may be addressed to him, care of Publishers.

* Vide *The Times*, London, Tuesday, November 28th, 1899, page 11:—“The Malaria Expedition to West Africa.”

† [We undertake to do this, and send replies to those who send in their opinion.—ED., I. M. G.]

* Vide Ross’s Report on Kala-Azar: page 75, “Crescents do not Produce Fever.”

Tabulated and Photographic Statement of Fever Cases treated in December 1899.

| December 1899: | No. | Age. | Sex. | Condition of Spleen. | Clinical type of Fever. | Kind of Layeran body present in the blood. | | |
|-------------------|-----|------|------|----------------------|----------------------------|---|-----|---|
| | | | | | | | | |
| 1st | 3 | 14 | F. | Enlarged slightly | ... Continuous | Malignant quotidian. Plate II. | (Q) | Q |
| 1st | 4 | 24 | F. | Not enlarged | ... Quartan | ... Quartan. Plate IV. | O | O |
| 2nd | 5 | 1 | F. | Not enlarged | ... Quotidian | ... Malignant tertian. Plate III. | O | O |
| 2nd | 7 | 13 | M. | Moderately enlarged | ... Quotidian | ... Malignant quotidian. Plate II. | O | O |
| 4th | 8 | 40 | F. | Not enlarged | ... Quotidian | ... Malignant quotidian. Plate II. | O | O |
| 4th | 9 | 10 | M. | Much enlarged | ... Tertian | ... Quartan. Plate IV. | O | O |
| 4th | 10 | 30 | F. | Not enlarged | ... Irregular | ... Aestivo-autumnal; crescents only. Plate V. | O | O |
| 4th | 11 | 1½ | F. | Slightly enlarged | ... Quartan | ... Quartan. Plate IV. | O | O |
| 4th | 13 | 20 | F. | Moderately enlarged | ... Quotidian | ... Malignant quotidian. Plate II. | O | O |
| 5th | 15 | 8m. | M. | Not enlarged | ... Quotidian | ... Malignant tertian. Plate III. | O | O |
| 6th | 16 | 5 | F. | Not enlarged | ... One day only | Malignant tertian. Plate III. | O | O |
| 7th | 20 | 11 | F. | Not enlarged | ... Quotidian | ... Simple tertian, double. Plate I. | O | O |
| 8th | 22 | 10 | M. | Moderately enlarged | ... Irregular | ... Simple tertian. Plate I. | O | O |
| 8th | 23 | 9 | M. | Moderately enlarged | ... Tertian | ... Simple tertian. Crescents. Plates I and V. | O | O |
| 9th | 24 | 9 | M. | Much enlarged | ... Unknown | ... Quartan. Plate IV. | O | O |
| 11th | 27 | 45 | F. | Moderately enlarged | ... Quartan | ... Quartan. Plate IV. | O | O |
| 11th | 28 | 26 | F. | Not enlarged | ... Tertian | ... Simple tertian. Plate I. | O | O |
| 12th | 22 | 30 | M. | Much enlarged | ... Quotidian | ... Quartan. Plate IV. | O | O |
| 12th | 30 | 12 | M. | Slightly enlarged | ... Quotidian | ... Malignant quotidian. Plate II. | O | O |
| 12th | 31 | 4 | M. | Much enlarged | ... Unknown | ... Malignant quotidian. Plate II. | O | O |
| 12th | 32 | 3 | F. | Moderately enlarged | ... Quotidian | ... Malignant tertian. Plate III. | O | O |
| 12th | 33 | 45 | F. | Slightly enlarged | ... Irregular | ... Quartan. Plate IV. | O | O |

December
1899.

| | No. | Age. | Sex. | Condition of Spleen. | Clinical type of Fever. | Kind of Laveran body present in the blood. | |
|------|--------------------------------------|------|------|----------------------|-------------------------|--|-----------|
| 13th | 34 | 32 | M. | Moderately enlarged | .. Irregular | ... Malignant quotidian. Plate II. | Q Q Q |
| 13th | 35 | 15 | M. | Not enlarged | ... Tertian | ... Malignant tertian. Plate III. | Q Q Q |
| 13th | 36 | 6 | F. | Not enlarged | ... Tertian | ... Malignant tertian and malignant quotidian. Plates II and III. | Q Q C |
| 15th | 42 | 7 | F. | Much enlarged | ... Irregular | ... Quartan. Plate IV. | Q Q |
| 18th | 46 | 35 | M. | Not enlarged | ... Quotidian | ... Quartan. Plate IV. | Q Q |
| 18th | 47 | 6 | M. | Slightly enlarged | . Quotidian | ... Simple tertian. Plate I. | Q Q |
| 18th | 48 | 3 | F. | Not enlarged | ... Quotidian | ... Malignant tertian. Plate III. | Q Q |
| 18th | 50 | 3 | F. | Not enlarged | ... Unknown | ... Malignant tertian. Plate III. | Q Q |
| 26th | 53 | 8 | F. | Much enlarged | ... Quotidian | ... Quartan, double. Plate IV. | Q Q Q |
| 26th | 54 | 7 | F. | Much enlarged | ... Quartan | .. Quartan. Plate IV. | Q Q |
| 26th | 55 | 23 | F. | Much enlarged | .. Tertian | .. Simple tertian. Plate I. | Q Q C |
| 26th | 56 | 9 | F. | Much enlarged | ... Quotidian | ... Simple tertian. Plate I. | Q Q |
| 26th | 57 | 10 | F. | Moderately enlarged | ... Quotidian | .. Simple tertian. Plate I. | Q Q Q |
| 29th | 62 | 9 | F. | Moderately enlarged | ... Quotidian | ... Quartan. Plate IV. | Q Q |
| 30th | 63 | 11 | F. | Moderately enlarged | ... Tertian | ... Simple tertian. Plate I. | Q Q C |
| 30th | 64 | 6 | F. | Much enlarged | ... Irregular | ... Quartan. Plate IV. | Q Q |
| 65 | [DIAGNOSIS OF TYPE OF FEVER INVITED] | | | | | | Q Q Q Q Q |

It is almost impossible in a photograph or drawing to show any difference between the so-called malignant quotidian and malignant tertian forms of the hyaline body. The former is not quite so distinct, and has not such a shining appearance as the latter.

A MIRROR OF HOSPITAL PRACTICE.

CASES OF ECTOPIC GESTATION.

BY A. J. STURMER,
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Superintendent, Government Maternity Hospital, Madras.

(Continued from page 57.)

THIS case would have been treated as an haematocele some years ago, and her stay in hospital would have been considerable. By the removal of an impaired organ, the ruptured tube, and of the blood tumour, she was spared much pain and suffering and her confinement in hospital curtailed.

Case III.—Hindu, *act.* 32 years, admitted 8th February. Notes of the case are deficient. The abdomen was opened in the middle line as usual, and fluid blood and serum escaped. The pelvis was filled with black-clotted blood, which was adherent to the intestines and abdominal walls, and was removed with difficulty. Prolonged washing with sterilised water was used to disentangle the blood clot. The left tube was found ruptured, and was, with the ovary of that side removed; the rupture was recent. The tube was found contracted about the middle and at the outer end; there was a small ruptured sac protruding from the tube, with well-marked amniotic cavity, but no trace of an embryo could be traced. On the afternoon of the 8th the temperature rose to 101·8, but fell gradually towards evening. On the 12th the temperature again rose to 101·2; there was no apparent cause for it, and it soon fell. On the 15th the stitches were removed, and the wound was healed. She was discharged on the 3rd March.

Case IV.—Hindu, *act.* 30, admitted 1st February, complaining of retention of urine of 3 days' duration, was treated for 3 days in the Gosha Hospital, where poultices were applied, and the urine drawn off at regular intervals. Gives a history of her periods stopping for 3 months, and then having a profuse period with clots, which lasted 8 days (? abortion) no foetus was seen. Three days after this she had fever and severe pain in the abdomen. The (?) abortion occurred two months ago, since then she has had a period; a few days ago menstruation regular and painless; urine healthy. Is fairly nourished; temp. 99·4; pulse 96; abdomen slightly tender. *Per vaginam:* The whole of the pelvis is blocked up by hard effusion which has a stony feel; uterus cannot be differentiated; no particular tenderness; was ordered Dover's powder and hot douches and improved very much. On the 9th February she insisted on going home against my advice. She returned on the 11th with retention. On the 14th February the note is, "Cervix quite at the outlet and is very soft; back of pelvis filled with

a great round mass. Uterus jammed against the pubes. Tumour more on the right side; it extends upwards to within three-finger breadths of the umbilicus." On the 26th it was found that the cervix was close against the pubes, or looking downwards and backwards; body in front close to the pubes; back of pelvis filled with a swelling which goes on to the sides; enlarged ovary on the left side; ovaries and tubes matted together. On 1st March the abdomen was opened, and the pelvis was found to contain old blood clot. This and also a rounded sac, about the size of a duck's egg, filled with clot, and lying behind the uterus, were detached from their adhesions and removed. The sac was found to be ruptured. The right ovary contained old blood clot and was ligatured and cut off. The left ovary could not be made out, nor could the tube be traced from the uterus. Adhesions were separated and divided between two ligatures; the uterus was small; all clots were removed from the abdomen. The parts removed were found to be an old ectopic gestation cyst filled with blood clot, with smooth interior; no trace of an embryo could be discovered, nor could the tube leading to the sac be made out. The right ovary was large, apoplectic, full of old blood clot, with scarcely any ovarian tissue left.

After the operation the temperature fell to 97·2, but soon rose to normal. She went on very well, the temperature never rising above normal. The deep stitches were removed on the 8th day, and on the 22nd March she was discharged.

She was seen again on the 19th June, when she complained of pain on the right side. A vaginal examination was made, and the uterus was found pushed forward, and the anterior vaginal wall drawn up. A cystic tumour was found filling up the pelvis. She was advised to come into hospital, but never appeared again.

Case V.—Hindu, *act.* 33, admitted 16th May, complaining of pain in lower abdomen, vomiting, sudden faintness and amenorrhoea of 4 months' duration; has had one child and two abortions. The child was born 8 years ago. On the night of the 14th May was awakened by severe pain and faintness, accompanied by vomiting. Menstruation irregular, free, painless, lasting four days, sometimes anticipated by 10 or 15 days. On admission pulse very irregular, 120. *Per vaginam:* Uterus pushed bodily forwards, cervix soft: behind, filling up Douglas' pouch is a fluid tumour; tapped with hypodermic syringe, a small quantity of fluid-looking like liquor amnii withdrawn. Under chloroform operation commenced at 10-55 A.M., completed at 12-10 noon.

The abdomen was much distended with flatus; no fluid thrill could be elicited. An incision large enough to admit the hand was made in the middle line; and on making a small opening

into the peritoneum, fluid, black blood, issued in a jet. It was found that a large quantity of fluid, blood and clot, had collected in the lower abdomen. This was partly removed by sponge and partly by hand. A large cystic tumour, the size of a large mango, was felt behind and to the left in Douglas' pouch. It was gradually brought to the surface; but before reaching it, it ruptured, and foetal limbs could be felt. It was found to consist of the dilated left tube, clot and ovary. These were ligatured in a double loop and removed. The abdomen was flushed with sterilised water and then with warm saline solution. All clots as far as possible were removed, and as much saline solution as the abdomen would hold was left inside. The abdomen was sutured in three layers. The abdominal walls were loaded with fat. There was no milk in the breasts.

The parts removed consisted of the left tube, which was greatly distended. It had ruptured probably long before, and the foetus being extended, had continued to grow. Then a second rupture took place, in which the patient lost a great deal of blood. The chorionic villi were well marked, and patches of placenta (?) were commencing to form. The foetus measured 5 inches, and the cord was long. The ovary was not implicated, but was attached and partially removed. The right tube and ovary were normal.

On the 17th.—The note is: Patient very restless, throwing herself about and attempting to get out of bed and shouting; marked distension of abdomen. Pulse 144; respiration 34; temperature at 4 P.M. was 97; was given $\frac{1}{6}$ th gr. morphia and $1\frac{1}{10}$ th gr. atropine hypodermically; passed a very bad night; restless and sleepless; complaining of pain; voice strong; pulse 112.

On the 18th.—Pulse 112, intermittent; respiration 36; much quieter; no sleep, still talking and exciting herself. Abdomen much less distended and soften. Bowels opened freely after the mixture; temperature 99.

19th.—Bad night; restless and noisy at times. Has been sleeping on and off all day; no pain. Bowels moved frequently; temperature 100; pulse 120; respiration 36. Is inclined to vomit. Distension has much increased.

20th.—Had a quiet night, and slept fairly well during the intervals, when her bowels were not moved. Pain and distension less marked. Pulse 116; respiration 40. General condition no better.

21st.—At 5-30 P.M., yesterday, complained of very severe pain and oppression at her chest. Heart's action very rapid; pulse small and running; temperature 99. Had amyl nitrate inhalations and brandy and ammonia. Passed a bad night. Is quiet this morning. Pulse 124; bowels moved 11 times; loose yellow motions, not offensive. Urine deposits phosphates and is high coloured; temperature 99.

22nd.—Quiet but sleepless. Pulse 132; no pain; abdomen soft; tongue moist at side, but dry and fissured in dorsum. Diarrhoea continues; temperature 100·4; respiration 44.

23rd.—Quiet, some pain and distension of abdomen; pulse, 128, weak; diarrhoea continues. Patient to-day very restless; hands and feet cold; pulse almost imperceptible; throwing off the clothes.

24th.—At 2-50 A.M., patient became convulsed; tried to get out of bed; breathing became very much hurried, and at 3 A.M. she died. After death the parts were examined; the external wound was fairly healed, but from the lower two stitch-holes reddish serum was oozing, and the parts round the stitch-holes look sodden. On opening up the wound the abdomen was found to contain dark fluid blood, about 10 ounces, or a little more, and a good many clots. The intestines show no signs of peritonitis, and the peritoneum is not injected. The ligature was found tightly encircling the stump, and no bleeding came from this.

This case evidently died of septicæmia, and it would have been better to have opened up the lower portion of the wound and flushed out the lower abdomen with salt solution. The blood probably came partly from some of the adhesions which were broken down in removing clot, &c., and partly was the remains of the salt solution and blood which were left after the operation in the abdomen. She was a bad patient from the first, would not lie quietly in the bed as she was ordered, and was incessantly talking and abusing every one about her.

Case VI.—Hindu, *act.* 20 years, admitted 2nd May, complaining of pain in the lower abdomen. States that she had amenorrhœa for three months; period came on ten days ago, four days after which severe pain in the lower abdomen came on. Had one child, three years ago. Is not nursing, but milk is found in the breast. Menstruation regular, painless, lasting 4 or 5 days. She was examined per vaginam, and the vagina was found hot, and abdominal walls tight. As nothing could be made out, she was placed under chloroform, and the pelvis was found clear. There was a swelling in front on the left side. Uterus appears to be lying back. There was nothing definite in this examination, and she was kept in bed; poultices applied to the abdomen and Dover's powder given by mouth. The temperature varied from a maximum of 100·2 on the 4th to sub-normal 98°. The pulse, which was 132 on admission, fell to 92·80. As no improvement took place in her condition, and as the pain appeared to get worse, she was prepared for operation, and on the 17th May the abdomen was opened. Operation commenced at 9-50 A.M.; was finished at 11·5 A.M. This was supposed to be a case of extra-uterine gestation, and at the first examination

the tumour was to the left and in front. At the time of the operation another examination was made: a large sausage-shaped swelling was over the seat of the *caput coli*; in front was a hard mass, which was supposed to be the uterus. *Per vaginam*: The swelling on the right side was not inflammatory; it was sloughy and did not shade off on to the pelvic wall. The sound passed 3 inches. The cervical canal was dilated and curetted, but no decidua tissue was removed. The patient had had a red discharge from the vagina on the 4th, 5th and 6th, and again on the 14th, 15th, 16th, 17th, which was offensive at times. Milk in the breast was very marked. The swelling, which was taken to be the uterus in front, was proved by the sound to be that organ. This made the likelihood of a ruptured tubal gestation stronger, but as the diagnosis was not certain, a small incision of an inch and-a-half was made, and later this was considerably increased so as to permit the hand to be passed. The omentum was found covering the whole of the swelling; it was attached below to the abdominal wall covering in the bladder. On opening the peritoneum dark clots presented. The fingers were worked round the free edge of the omentum, which was then ligatured in two places and divided between the ligatures. The fingers could then be passed behind the swelling, which was gradually raised, and in doing this a large quantity of old blood clot was removed. It was found that the haemorrhage had come from the left tube, which was much dilated. A double hook ligature was applied and the tube removed; the ovary was left behind. The abdomen was flushed with sterilised water, and all clots as far as possible removed. About one pint of saline solution was poured into the abdominal cavity and left. The intestines were found much reddened. Although an enema had been administered to her in the morning, the rectum was found greatly loaded, and with difficulty a pint of salt solution was injected into it. On removal the parts consisted of the tube, which was greatly dilated; the fimbriated end was dilated and open, and the blood had evidently been extravasated through this, for no rupture could be made out. On laying open the tube, the remains of an amniotic sac were visible, but no embryo could be found; it had probably passed through the tube and was embedded in one of the numerous blood clots.

She stood the operation fairly well; the temperature rose to 100·6 at 4 P.M.

18th May.—Slept very little, vomited twice. Pain complained of; urine very high coloured. Pulse soft and quick, 128; respiration, 28; temperature, 98°6.

5-30 p.m.—Patient looks much weaker; temperature 99°4. Pain and frequent vomiting. Is restless and unable to sleep. Calomel pill

ordered, to be followed by magnesia mixture. The latter she was unable to retain, so it was discontinued. An injection of morphia was given, but its effect was very slight. Hot water bottles had to be placed next the body, for, although perspiring profusely and skin very cold, her temperature was above normal.

19th May.—Patient worse this morning. Increased distension of abdomen. Passed a bad night, very restless, noisy and sleepless; great thirst. All medicine and nutriment stopped by mouth; is fed by nutrient enemata. Pulse irregular and soft, 144.

4 p.m.—Vomiting has ceased, but thirst very urgent. Face pinched, eyes and cheeks sunken. Pulse rapid, small, and thready. Less distension of abdomen. Is quieter. Tongue dry and fissured.

8-30 p.m.—Very restless. Throwing off the bed-clothes, talking incessantly; complains of intense thirst. Pulse uncountable at the wrist. Complains of burning sensation all over the body, although the legs, feet and hands are icy cold. Saline solution injected into right axilla. Calomel gr. $\frac{1}{2}$ given every hour. Vomiting has commenced again.

20th May, 1 a.m.—Very restless, constantly talking; complaining of pain in the abdomen. Thirst relieved after the subcutaneous injection. Pulse thready and almost imperceptible. Died at 1-57 A.M.

I think this case was more or less septic at the time of operation. For four days before the operation the temperature had been gradually rising, and at the operation the intestines were found injected, implying a certain amount of inflammation. It would have been as well if the abdominal wound had been re-opened, although I am doubtful if this would have effected the result. This case and the last dying so soon after operation and within so short a period of each other made me enquire as to the sterilising of instrument, &c. I was informed that everything had been done as usual, and no details omitted; and out of more than 50 abdominal sections, these are the only two who died of septic poisoning. Of course blood clot that has once been exposed to the air is very liable to decompose, and it is not always possible to remove every particle. On the other hand, cases are reported where the tube or ovary are removed, and no attempt made to remove extravasated blood, and the cases have done well. For this reason I am more inclined to think that something was wrong in my technique, but what it was I cannot say.

(To be continued.)

THE
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 MARCH, 1900.

RECENT ITALIAN WORK ON MOSQUITO
 MALARIA.

WE are glad to see that in their recent communication to the Tenth Congress of the Italian Society of Internal Medicine Drs. G. Bastianelli and A. Bignami take a more liberal view of their indebtedness to previous observers and more especially to the work of Ronald Ross than, they seem inclined to do when their earlier work on Mosquito Malaria was published. We are indebted to the *Lancet* (January 13th) for a translation of a very valuable article by these authors. We will here endeavour to give a summary of this article, as it touches upon many points of extreme interest to all who wish to understand what is claimed for what is called the mosquito theory of malaria. The writers begin by referring to the two mosquito theories, *viz.*, that which they attribute to Manson, that is that the mosquito sucks the malarial blood and then dies in water, and so infects the water, just as the mosquito does in the case of elephantiasis. This theory was only provisionally put forward by Manson, and it is by no means certain that direct injection by the mosquito is the sole way that the infection can be conveyed. Manson, however, in common with nearly all other writers now adopts the view that primary malaria is usually conveyed into the human system by the direct bites of the mosquito, as Ross has proved in the case of the proteosoma of birds, and as Bignami in his former article attempted to prove for man. It was Grassi who pronounced as "suspected" all the species of mosquitos which are found in malarial localities and are not found in healthy ones, *viz.*, *anopheles claviger*, *culex pectinifer*, and the so-called *culex malariae*. It was with these species captured in the adult state in 1898 that the first case in man of experimental infection of malaria was obtained, though it could not then be decided which species was responsible. Subsequent researches showed that it is the genus *anopheles* which is the extra-corporeal host of

the malarial parasite. Our authors give a resumé of the cycles of the aestivo-autumnal parasites, which they claim to have traced from the blood of a malarial patient to the salivary gland of the mosquito "in perfect accordance with that described by Ross in the case of the proteosoma of birds in the grey mosquito." They then show that the same facts hold good for the tertian and quartan parasites. "All three species of malarial parasite, distinguishable with certainty from each other, adopt as host the same species of mosquito." They have seen with Grassi that *anopheles*, after having sucked blood containing crescents, on subsequently biting a healthy person communicated to him the aestivo-autumnal infection; and recently they have made a corresponding test with tertian parasites, showing that *anopheles*, after having bitten a tertian patient, become capable of inoculating tertian fever into a healthy patient. It is also shown that it is not possible to transform the tertian parasite into the aestivo-autumnal by the agency of a higher summer temperature.

So that even after their passage through the *anopheles* the species of malarial parasites remain distinct, and do not become transformed one into the other. "Besides this result our inoculation experiments permit us to affirm that a single infected mosquito, is capable of inoculating malaria into man." This is an observation which, if confirmed, is of the greatest practical importance. But our authors go further, namely "that a single mosquito by successive bites can infect several people; in fact on examining some of the mosquitos employed in our experiments after they had bitten the healthy subject, who had subsequently taken the fever, we have still found sporozoites in the salivary glands and mature capsules with sporozoites in the intestine, proving that even if at a single bite the *anopheles* empties all the contents of its salivary glands, the glands may still become affected afresh. And more than this, since it may occur that the two species of parasite may develop in one and the same mosquito, for instance an aestival and a tertian, the two, as we have proved, remaining distinct, it may well happen that a single *anopheles* may inoculate a mixed infection, *e.g.*, aestival and tertian." Indeed it is well known that mixed infections of aestival and tertian are by no means rare in Italy. Our authors next proceed to discuss the practical bearings of the knowledge that the malaria

parasites have two necessary hosts. Thus, to explain completely the course of a malarial outbreak, it is necessary to study, firstly, the malarial individuals; secondly, the malarial mosquitos, and thirdly, the places in which the larvae of the anopheles develop, that is the "malarial soil" in the traditional sense of the expression. Our authors made such a study at the well-known malarious locality of Ostia in the spring and summer of 1899. With regard to the malarial patients, it was found that as a rule in winter only *relapses* of *aestival*, *tertian* and *quartan* are found. As the season advances the relapses of *aestival* become more and more rare until in the spring it is most difficult to find a patient with crescents. On the other hand relapses of *tertian* and *quartan* continue to occur right through the spring up to the commencement of the new malarial season, which begins in the first week of July with a sudden increase in the number of patients. During the spring some rare cases of first attacks of common *tertian* are met with, but the fact remains that the malarial season proper, with its fresh outbreak of primary attacks does not commence till the beginning of July and does not terminate till the end of the autumn. This holds good for all varieties of malaria. So far so good, but it is not easy to see how our authors decide upon what is a "relapse" and what is a "new infection." In fact they admit this in the next sentence, when they remark "patients who had suffered from fever in the previous year, in whom it was not possible to be certain whether we had to do with a relapse or a reinfection." So much for the malarial patients, the writers now turn to the observations made at the same time on the anopheles. In Ostia it is the *anopheles claviger* which almost exclusively prevails. In the months of March, April and May anopheles were found in the houses, in the stables, and also under the bridges, generally with mature ova.

In the month of June anopheles began to be found infected with the parasites, but only those caught near inhabited places, which probably had taken the parasite from persons suffering from relapses. It was also found that wherever the people gathered together, there the infected anopheles began to be found in abundance. The following figures are very instructive. Of the anopheles collected in the huts of seven people on July 1st, only two out of seven were found

to be infected; of those collected on July 9th and 10th, two out of seventeen; of those captured on the 17th, fifteen out of 32; on July 20th, the number of infected anopheles rose to eleven in seventeen, or about 64 per cent., some of them presenting ruptured capsules and mature sporozoites, while of those captured in the stables or in places remote from human habitations none were found infected. By the end of July nearly all the men who had slept in these huts were affected with either the *aestival* or with *tertian* fever. The progressively increasing number of anopheles found affected explains in the clearest manner the final outbreak of fever among all the labourers.

It would thus appear from the above observations that the outbreak of malaria in its severe form in July can be explained by the presence of anopheles which had become infected by the cases of fever relapses which were met with in May and June.

Dr. Bignami goes on to describe his study of the localities in which he found the anopheles develop, and this portion is not only interesting, but of great practical importance. It shows moreover that what is true for the anopheles in Sierra Leone is not necessarily true for other localities, as observers in India have already begun to find. The district of Ostia is intersected by drainage canals which collect the water of the lowest levels and convey it to the elevating machines by which it is emptied into the sea. Now in all the secondary canals and in that part of the main canal furthest from the elevating machines, where there grows a rich vegetation of reeds and algae, there was found an immense number of larvae of the anopheles. The larvae were absent from the water of the canals near the machines where the current was strong, everywhere else where the current was slack or where it tended to stagnate the development of the larvae was most vigorous. Another favourite breeding place was in a small lake on the estate of Castel Fusano. This observation, we think, is of great importance to us in India. We all know how an increase of fever in many places has been popularly attributed to the increase of irrigation. We may remember how the origin of the great Lower Bengal fever epidemic of the seventies has been attributed to the bundling up of a river in the Jessore district. It may well be that the real cause is that the

water-logged condition of such areas affords numerous breeding places for the anopheles. These observations, although only meant to apply to the district of Ostia in Italy, also suggest to us the possibility that if similar localities in India were examined, we might have similar results. At any rate it is clear that we must not confine our attention to small puddles only in the search for the anopheles, as a too literal following of the reports of Major Ross's expedition has led many to do. The peculiar habitat and breeding place of the anopheles must be discovered in every place in which it is proposed to attempt the extirpation of the peasant mosquito.

It is also to be noted that while we, in the British Empire, are attempting to banish malaria, by banishing the extracorporeal host of the parasite, in other countries this is not being attempted. Koch has already announced that the way to get rid of malaria is to kill the parasite while still in the patient's blood, and in this article Drs. Bastainelli and Bignami preach the same doctrine. They write: "The careful treatment of the individual patient constitutes one of the principle tasks of hygiene . . . energetic treatment by quinine, from the commencement of the infection, of the tertial fevers not only reduces the dangers of relapses to a minimum, but has evidently a great importance for general prophylaxis, since the parasites by this means could be prevented from developing into those forms which continue their life in the anopheles." Here also we have a justification for our practice of attempting to limit the ravages of malaria by what is known as the prophylactic issue of quinine.

There are, therefore, the two methods of attempting to banish malaria, which we may call the British and the Continental; which will turn out to be the most practical remains to be seen, for our own part we think it a counsel of perfection to tell us to attempt to get rid of fevers in a country like India by means of dosing the people with quinine. By all means let us do all we can to inculcate a belief in the virtues of quinine, and to encourage its use. We would also enter a plea for the more thorough treatment of individual cases of malarial fever; we should not be content to leave off the quinine because the fever has disappeared,—disappearance of fever by no means implies the destruction of the parasite.

This may be granted, yet we think there is more hope in the British method; it is difficult to get rid of every spot where the anopheles might flourish, but at least it is less chimerical to hope for than the thorough dosage with quinine of every man, woman and child who may have suffered from fever during a fever season. And moreover we must remember that it was probably by destroying the haunts of the anopheles that malaria has been banished from well-drained and well-cultivated countries, in which it formerly held sway.

LONDON LETTER.

WHEN DOES THE 20TH CENTURY COMMENCE?

THIS question, as happened in 1800, is being made the subject of considerable discussion, which, however, is not so treated as it appears to have been a hundred years ago. The change from the familiar 18— to 19— is certainly an event of interest, and we seem to have entered upon a new epoch of some sort; but it is impossible to overcome the fact that the first year of the Christian era must have been the year 1, and, if so, the first year of the twentieth century must be 1901, and not 1900 which completes the nineteenth century. This, in short, has been recognised as the truth although the Emperor of Germany, in a speech which he made at the beginning of the year, seemed to think otherwise. Retrospects of the century have, therefore, been postponed until the end of this year when no doubt we shall have a plentiful crop of them.

1899.

The summary of the medical history of the past year presented by the "Annus Medicus" of the *Lancet* in its issue for December 30th is as usual exhaustive and admirable. The general impression gained by a perusal of this elaborate survey of medical work is that while characterised by great industry and substantial progress in every department of effort, the record of the past year is a comparatively uneventful one. It is marked by no great discovery in science, no great advance in practice, no notable change in organization, and yet there gleams through the story evidence of unceasing movement towards the amelioration of humanity—the prevention of disease, the alleviation of suffering and the prolongation of life. In this country,

the state of the public health has been on the whole satisfactory. We have been visited by no epidemic. Although some six cases of plague have been detected in our seaports the dreaded malady has not effected a landing. This may fairly be credited to vigilance in discovery and isolation and to the absence of favouring condition in the shape of overcrowding and filth. Portugal has been less fortunate. Imported into Oporto in June the disease has attacked some 296 persons, of whom 107 have died. Diphtheria is, however, on the increase in England; the rate per million having increased from 163 in the last decade to 253 in the present. This increase is attributed and no doubt with truth to the association of children in public schools and the difficulty of preventing the mixing of slight or ambulant cases with their school-fellows. The third quarter of the year was characterised by a large and unusual prevalence of diarrhoea—more especially among children which raised the death-rate unduly. This was apparently caused by an excess of temperature and deficiency of rain, bringing local insanitary influences into pernicious operation.

PROPHYLACTIC AND CURATIVE INOCULATIONS.

No feature of the medical history of the past year is more remarkable than the increased use of serous inoculations for the purposes of protection and cure. Haffkine's work in India in cholera and plague has been amply published and discussed in your columns. In an interesting lecture delivered at the Royal Society he developed a very interesting distinction between anti-microbial and anti-toxic inoculations; cholera representing the former, and plague the latter. He claims on the basis of differential statistics of communities and institutions that the incidence of both diseases has been substantially less among the inoculated than among the uninoculated; but whereas the cholera inoculations are of the anti-microbial kind, simply preventing the development and multiplication of the microbe but not antagonizing its toxine when it does live and grow and therefore not reducing the case mortality, the plague inoculations are both anti-microbial and anti-toxine diminishing liability to attack and reducing lethality.

How long the protective influence persists is a moot point in both cases. Professor Wright's antityphoid inoculations have undergone an

extensive trial among troops proceeding to South Africa, and means have been taken to obtain exact records of results. Until these have been collected and tabulated judgment regarding the merits of the process must remain in suspense. Curative inoculations have been employed during the year in tetanus, snake bite and septicæmia and encouraging results have been recorded under each head. A strong case has been established for the use of Calmette's anti-venine, and this material ought certainly to be distributed in India and employed whenever suitable circumstances arise; the results positive or negative being carefully noted and made known. Of the laboratory success of these injections there is no doubt whatever, and numerous cases have been published indicating its success in human cases.

VACCINATION IN ENGLAND.

The effect of the Vaccination Act of 1898 which introduced a system of domiciliary vaccination, the use of glycerinated calf-lymph and immunity from prosecution for the conscientious objector, has been on the whole favourable. The number of vaccinations has increased. People who would not trouble to take their children to stations do not resist the vaccinator when he calls at their homes. The prejudice against contracting other disease than the vaccine by the use of human lymph has been disarmed by the employment of animal lymph, and the conscientious objector, who made himself very conspicuous shortly after the Act was passed, has apparently sunk into obscurity. The administration of the law has been improved by limiting the power of the guardian and the example of the smart manner in which the guardians of Leicester were brought to their senses when they attempted to cripple the operations of the law cannot fail to have a salutary effect. Complaint is, however, being made that the glycerinated calf-lymph does not keep well in warm weather.

THE CRUSADE AGAINST RATS.

M. Calmette, who was deputed by the French Government to study the plague in Portugal, has advocated the destruction of rats and mice as an important item in a scheme of plague prevention. His advice to search the holds of vessels coming from infected or suspicious ports for dead rats to examine these, and if found infected to deal with them and the cargo accordingly appear to be both sound and feasible.

But I am inclined to doubt whether the wholesale and indiscriminate destruction of rats by putting a price on their heads, in vague fear and anticipation of plague as they are doing in Denmark, is a wise or practicable measure. Whether the rats ought to be and can be exterminated is a separate question, or rather a part of a larger question affecting vermin in general, but in the presence or reasonable apprehension of plague the recognition of the rat as a victim and carrier of infection has become an assured fact, and the obvious practical application of that fact, namely, the destruction of the victim and carrier, in as far as that can be accomplished has become a positive obligation.

THE MAUSER BULLET.

Reports from South Africa have abundantly shown that, while the Mauser bullet possesses sufficient stopping power, the wounds caused by it are more merciful and reparable than those caused by any other missile which has been used in warfare. These reports also indicate that the medical arrangements and services made and engaged in the serious campaign have been most effective. "Never," states the *Lancet*, "has the medical service acquitted itself better, and never have medical officers exhibited greater bravery and devotion on the battlefield, or done better work than they have done and are still doing in South Africa at this time." Professor Ogston notwithstanding, the medical department has risen to the present emergency with competence and credit.

12th January, 1900.

K. McL.

Current Topics.

AN INDIAN MEDICAL CAREER.

THE life of Alexander Grant who died on January 3rd at the ripe age of eighty-two aptly illustrates the possibilities of a career in the Indian Medical Service, and makes it possible to understand the attractions which the Service still holds out to the medical student who intends to enter it. Alexander Grant entered the Indian Medical Service in April 1841. He was appointed to Her Majesty's 55th Foot, and went with them to join the China Field Force. He was present at the capture of Amoy and in many other battles. He was placed in charge of the cholera cases of the 49th Foot and then served with Lord Saltun's brigade at Nankin. After the war

he returned to India in charge of the 41st Madras Infantry. In 1845 he was appointed Civil Surgeon of Bhagalpur, and from thence was ordered to join the army of the Sutlej on the outbreak of the 1st Sikh war. Afterwards he returned to Bhagalpur, and soon after to Chapra. He was then ordered to the N.W.P. on special duty by the great proconsul, Lord Dalhousie, who wrote to him as follows—"No medical officer in the service has been more strongly recommended than yourself, and I am truly desirous of obtaining the benefit of your services and your skill." In 1849 he was appointed Surgeon to the Governor-General, an office which he held for seven years. In 1856 he prepared for the Governor-General a digest of all that had been written on the reorganisation of the Indian Medical Service and sketched a plan which was adopted by Lord Dalhousie, and formed the basis of the memorable despatch to the Directors, which was the first liberal and enlightened acknowledgment of the claims of medical officers by any English statesman. Soon after this he was appointed to the highly-prized office of Surgeon-Superintendent of the Presidency General Hospital, Calcutta. In the meantime he accompanied Lord Dalhousie to England, and when there gave evidence before a Parliamentary Committee on the Indian Medical Service. On his way back to India Surgeon-Major Grant visited the chief hospitals of Europe. On his return he was appointed Apothecary-General and Opium Examiner to the Government of India, and President of the Faculty of Medicine in the University of Calcutta. He was thanked by the Governor-General and by the Secretary of State for his valuable services during the time of the mutiny, in the provision of medical stores to the army in the field. In 1861 he went home on sick leave and shortly after retired with the rank of Surgeon-Major. During his twenty-one years service in India Surgeon-Major Grant made many valuable contributions to Indian medical literature. In 1853 he founded *The Indian Annals of Medicine*, and was, till he left India, its Joint Editor, along with Norman Chevers.

Even after his retirement in England his interest in India did not slacken, and he served on the Committee of the Indian Mutiny Fund and his interest in the service which he had adorned never lessened. He was appointed an Honorary Surgeon to the Queen. The above account is taken from one written by Sir Joseph Fayrer, Bart, whose own career as an officer of the Indian Medical Service equals and even surpasses that of Alexander Grant.

ARMY HOSPITAL TRAINS.

THE hospital train for the removal of sick and wounded is playing and will play an important part in the medical arrangements at the seat of war that it is of interest to know how

they were managed in the recent war between the United States and Spain. An excellent descriptive article on these trains was read by Major C. Richard, U. S. A., at the recent meeting of the Association of Military Surgeons of the United States Army.

The Army hospital train was chiefly used to convey the sick and wounded from the camps on the coast to the places selected for the General Hospitals. A train consisted of ten hospital cars, a dining car, a baggage car, and a private car, thirteen cars in all. The private car was used for the medical officers on duty in the train. The combination baggage car was used both for the baggage of the sick and also as an office and dispensary. Most of the medicines used were in the tablet form, an important consideration in a rapidly moving train. The hospital cars were chartered from the well-known Pullman Company, and were of the type known as tourist cars, with sleeping accommodation in upper and lower berths. Some of the cars had twenty-four berths and others twenty-eight, so that the capacity of the train for patients was about two hundred and forty. The seats were covered with cane and had neither hangings nor carpets, and were supplied with water tanks and the usual facilities for toilet and bathing purposes. They were neither elegant nor luxurious, but they were easily kept clean. The personnel of the train consisted of one surgeon, one assistant-surgeon, (who was also Quartermaster,) two stewards and twenty men of the hospital corps, together with two cooks and a waiter. The train was subject only to the orders of the Surgeon-General of the Army, who communicated direct with the officer commanding the train. The cars were loaded by the hospital corps of the train, one squad passed the stretcher on to the carriage platform, and another squad carried the patient to bed. After some practice and drill the hospital squad could easily load a hundred stretcher patients within three hours. As the patients arrived at the train, they were briefly examined by the medical officer, name, rank, etc., recorded, and instructions given as to whether the patient was to have an upper or a lower berth. When the train was loaded the medical officers made their professional visits and examined and prescribed for each patient. While *en route* the usual hospital routine was kept up, regular morning and evening visits made, and the seriously ill visited as often as necessary. Upon arrival of the train at its destination the sick were unloaded and transferred to the hospitals ready to receive them. Typhoid fever constituted no less than 60 per cent. of all patients transported. In general the patients stood the journey well, in spite of the heat and dust during the summer months; but cases of typhoid fever in the height of the disease fared badly, though only

five deaths occurred on the train, three of which were from typhoid. This led to a more careful selection of the class of patient to be moved. Typhoid cases in the first week or in the convalescence stage were not unfavourably affected; in fact the latter often showed decided improvement.

The wounded also did well. The hospital train worked from June till March (1899), and during the first six months was always in motion, except when undergoing repairs. The average number of patients carried each trip was one hundred and twenty-seven, the greatest number on any single trip being two hundred and thirty-five. When finally discontinued its record showed 4,704 patients carried, of which no less than 2,781 were typhoid cases.

The detail of this service illustrates the fact that the hospital train is not merely a railroad ambulance but a moving hospital. The work done also demonstrates that severely sick and wounded, if properly selected, can be safely transported over long distances, and at the same time receive every hospital attention and treatment. We shall doubtless ere long hear details of the working of similar trains, which are now in use in Cape Colony and have already carried large numbers of wounded from the front to the hospitals at the base. The above interesting report also incidentally illustrates the fact that typhoid fever is the camp fever of the present day, and we can only hope that in time we will understand its aetiology so well that it will be abolished as completely as the old camp fevers of former days.

MAUSER BULLET WOUNDS.

The Lancet is lucky in having Sir William MacCormac as its correspondent at the front. His letters from week to week have been most interesting. He writes: "There are many interesting cases here (Frere Camp) at present. One cannot help contrasting with amazement the comparative harmlessness of the injuries so frequently inflicted with the Mauser bullet with the frightful extent of the damage done by those of the needle gun and the Chassepot. To anyone familiar with the wound caused by these weapons, many of those inflicted by the Mauser rifle might be regarded as being somewhat of the character of a pinprick. Quite a large proportion of the wounded, in fact, have returned to duty, and several patients whom I have seen have been wounded for the second time at another engagement." He gives many examples, e.g., a private of the Dublin Fusiliers was wounded at Talana on October 20th. The bullet entered an inch above the root of the nose. The exit was at the junction of the frontal and squamous portion of the temporal bone on the right side. The bones were drilled

without any fracturing, the entrance and exit wounds being exactly the same size. The brain substance protruded. The wounds were dressed with dry boric dressing on the field. The patient suffered no inconvenience whatever, and the wounds were completely healed by the fourth day. Again, a private of the Devon Regiment was wounded on October 21st at Elandslaagte at a distance of 400 yards. The bullet passed through the tibia and the knee-joint and made its exit through the external condyle of the femur. Simple synovitis followed the wound, but the apertures healed by first intention. The synovitis is still slightly present. The testimony of another correspondent at the base is to the same effect. He says: "It requires a war like this to teach us how little damage, under favourable circumstances, a Mauser bullet through the lungs seems to do."

THE AETIOLOGY OF GOITRE.

THE admirable article on the *Aetiology of Goitre* by Professor J. G. Adami, of Montreal, in the January number of the *Practitioner* only serves to show how little progress there has been in our knowledge of the causation of this far from uncommon disease. Goitre is moreover one of the many diseases which we in the tropics share with Europe, about which so far the resources of science have not availed much. "Painfully ignorant" is Professor Adami's expression. He points out that the theories are legion. In England and Switzerland it used to be popular to explain goitre as due to some subtle influence brought about by life in mountainous regions; but the Island of Montreal can scarcely be spoken of as anything but a rich alluvial plain, and yet the district is so goitrous that in some French-Canadian villages scarce a family is to be found that has not one or more goitrous members. Then, too, the carrying of loads upon the head has been frequently called a cause, but rural Montrealers do not carry loads upon their heads, nor do animals—horses and dogs—do this, yet they are found similarly affected. Again the geological conformation of a country has been regarded as explaining the frequency of the affection. In Switzerland Bircher has pointed out that goitre is almost limited to Silurian and Devonian foundations and to carboniferous and permian deposits. The same is true for Norway, and in England Berry finds goitre only where there are chalk and sandstones of Triassic development. In Canada certainly the main goitre areas conform to the Silurian and Devonian deposits. But will this explain the prevalence of the affection in places so different as the alluvial plains of Mymensingh district, the districts of Tirhoot and the localised goitrous areas of the Punjab?

That the water habitually drunk has to do with the development of goitre is generally accepted, but what it has to do with it is still a very considerable doubt. Certain so called "goitre wells" give water which when drunk leads to enlargement of the thyroid and typical goitre. Bircher gives an example of a village in Switzerland, which at one time was markedly goitrous, and which in 1894 put in water-works obtaining its water from a goitre free region; as a result the percentage of cases of goitre among the school children in the village diminished from 59 per cent. in 1885 to only 11 per cent. in 1895. Other examples almost as strong could be quoted. But, as Professor Adami goes on to say, "as to what in the water leads to the disease," observations have so far led to only negative results. Of minerals, iodine more especially of recent years has been suspected, for Baumann's observations have shown the remarkable iodine containing body present normally in the colloid substance of the thyroid. But there are several valleys where the water is rich in iodine, yet goitre does not occur. In fact every individual chemical constituent of water has been suggested as having some relationship with goitre, but further study has failed to prove the connection. We are, therefore, thrown back on the possible existence of some living organism in the water. In favour of such a theory not a few facts have been brought forward. Notably there is in addition to its curiously endemic nature, the infrequent but well established occurrence of a sudden development of the condition in epidemic form in large bodies of men, troops, etc. Thus Valentin records an instance in an infantry regiment which went from Caen to Besanson. Within a few months thirty cases of goitre occurred, and in four years the number had risen to 1,009 cases. In this case it is remarkable that the officers living in the same barracks and drinking the same water escaped. In Silesia Heneke recorded that in the course of one year, in a newly-recruited battalion, 310 men out of 380, presented the disease. These cases are quoted by Professor Adami and can be easily paralleled from Indian experience, as the early volumes of this *Gazette* have testified, e.g., in 1868 Surgeon-Major L. Cameron* described the 41st Bengal Infantry as suffering from goitre. The regiment was transferred from Agra to Buxa in the Duars; the strength of the regiment was 678, and no less than 21 per cent. of the number became affected with acute goitre. The shortest period of exposure was eight months, the longest thirty-nine months. No European adult was attacked, but some cases occurred among the European children. The 38th Native Infantry succeeded this regiment at Buxa, and soon the admissions for goitre were $7\frac{1}{2}$ per cent.

* *I. M. G.*, 1884.

Cases of similar, but less severe, outbreaks have been reported in British regiments at Ranikhet. Some remarkable observations on the infectiousness of water were carried out by Lustig and Carle, who selected a horse and dog from a goitre free region, kept them in another goitre free region, but gave them exclusively water from a goitrous well to drink. Both horse and dogs rapidly developed goitre. These experiments are, as Dr. Adami says, suggestive. Lustig and Carle have described a bacillus, which liquifies gelatine, and it is said is constantly present in the goitre waters examined by him. Dr. Adami concludes that so far this bacterial or miasmatic theory is "still a theory without any positive facts whereby to establish it."

The alleged discovery of an haematozoon by Grasset, alluded to in our columns* some months ago has not apparently been confirmed; it is not even alluded to in Professor Adami's paper.

THE SUN FEVER OF TROPICAL AMERICA.

THE *New York Medical Journal* recently contained an editorial on what it calls the sun fever of Central America. The article is based upon one written by Surgeon W. H. Bell of the U. S. Navy, from experience acquired in Nicaragua. According to him the term "sun fever" is applied to a peculiar affection commencing with a brief stage of malaise, a feeling of fulness in the head and slight fever; the symptoms are accompanied by supraorbital headache, inflammatory swelling of the face, hyperæmia of the conjunctiva, impairment of vision and more or less photophobia. At the height of the fever, about the second day, the temperature is about 102° or 103° F., and the patient complains of pains in the back and legs with dull aching and tenderness of the abdomen. There is atony of the stomach and intestines; the tongue is slightly coated, swollen and flabby; there is complete loss of appetite, with considerable tympanites, gaseous eruptions and a tendency to constipation. The acute stage lasts five or six days. It is not dangerous to life, but is surprisingly exhausting. Unlike insolation, this fever does not leave its victim more sensitive than before to the pathogenic action of the sun; indeed it seems to protect him in a measure. Although Surgeon Bell believes the sun's rays are the actual cause of the disease, it is not by mere heat that they act, for nothing of the sort results from mere heat as in the fire room. There seems to be some special element in the solar spectrum, he says, "such as suggested by the phenomenon of the Roentgen ray," capable of injuriously affecting the tissues, and he calls the disease a sun traumatism. Dr. Bell thinks that British medical officers in India have not done enough to increase our knowledge of

tropical diseases. The Editor of the *New York Medical Journal* takes a more generous and less ignorant view, when he writes: "Let us endeavour in our new possessions to do better; nevertheless, if we but do as well as our British brethren have done, we need not be ashamed." As a matter of fact up till a decade ago, on the opening up of Africa, all that was known of tropical diseases was due to the work done by medical officers in India.

THE PLAGUE INTERCEPTION CAMP AT EL TOR.

In a paper read before the Epidemiological Society in December last, Dr. Armand Ruffer gave an interesting account of the preventive sanitary measures taken at Tor and Suez, against infected ships coming from the Red Sea and the Far East. The following is his description of the arrangements at El Tor:—The port and village of Tor are situated about one hundred and twenty miles south of Suez, at the foot of Mount Sinai. Though in the proverbially unpleasant Red Sea El Tor has a most pleasant climate of its own, being sheltered from the land winds by the huge Sinai range, while it gets full benefit of the north wind which for three hundred days in the year blows down the Gulf of Suez. Even at midsummer this wind makes the heat of the sun tolerable. Within the last few years, thanks to the liberality of the Egyptian Government, the former primitive arrangements have been considerably altered. Landing stages have been erected, pipe-water has been laid down, a railway has been made for the conveyance of luggage and the sick, and by next year laboratories and hospitals will be built. The pilgrims land in small boats at the jetty, and their luggage is taken on trucks to the disinfection station. This lies close to the sea, and the pilgrims wait in a covered shed until their turn comes to enter the camp. The camp lies about a quarter of a mile away, and is divided into compartments of about 150 metres broad and 250 metres long by fences of wire netting ten feet high. The compartments are now thirty-six in number, and each can hold 500 people easily. They are not occupied in order, but an interval of two empty spaces is left between two lots of pilgrims. At the entrance of each station there is a picket of soldiers. Each lot of five hundred pilgrims has its own Medical Officer and hospital establishment. The catering for the whole camp is undertaken by a contractor. Every day rations are served out at the expense of Government for very poor pilgrims who cannot afford to purchase food. Regular hospitals are being built; at present tents are used. The hospitals are divided as follows—(1) for ordinary diseases, (2) for gastro-enteric cases (3) for cholera, and (4) for plague. Of these by far the most important is that for

* I. M. G., 1898, p. 430, and April 1899, p. 138.

intestinal complaints, for the number of pilgrims who suffer from dysentery is enormous. Hardly a day passes but three or four worn out old men die from dysentery or its complications. Typhoid fever, small-pox, syphilis, and all kinds of strange skin affections occur among the contagious diseases; indeed the camp at Tor is an immense field for pathological research.

As regards the international regulations which regulate the camp, they depend upon whether the pilgrimage is "clean" or infected." If it is "clean," that is to say, if neither plague or cholera is raging at the Hedjaz, the pilgrims are detained at Tor only for two or three days. Only pilgrims residing in Egypt are allowed to land at Suez after a medical inspection. Foreign pilgrims may on no account land in Egypt, but must return through the canal to their own countries. The three days' detention of "clean" pilgrims is only insisted upon because the Powers who signed the Convention of Venice have little confidence in the declarations of the Turkish authorities at Jeddah; a want of confidence which is quite justified, for the Turkish authorities have never declared the presence of plague at the Hedjaz until it had become a matter of notoriety through other sources.

It will have been seen that the arrangements in force at El Tor are very similar to those in force at the numerous Plague Inspection camps on the railways of India.

RINGWORM IN ASSAM.

MR. ARTHUR POWELL, of Cachar, publishes an interesting paper in the *Lancet* (December 30th) on the anatomical and age distribution of the tinea of Southern Assam. He notes that while other ringworms are very common he has never met with a single case of scalp ringworm, but ringworm of the nails is very common. Out of 1,407 cases noted, in all the body was attacked; in 211 the nails were attacked, but in none was the scalp affected. This contrasts markedly with recorded figures in Britain. In Kalain the anatomical distribution of tinea seems to be mainly influenced by the form of dress worn by the patient. Thus the European sweats most under the armpits, and it is in the axilla and inner aspects of the thighs that he suffers most from what he calls "Dhobie's itch." The male coolie and the Bengali wear a loin cloth tightly tied round the waist, and they almost always suffer from a girdle of ringworm where this tightened cloth soaks up the sweat as it trickles from the upper parts of the body, and also in the fork. It is the same in other tribes and castes; wherever there is a tight cloth there is ringworm.

As regards age, Mr. Powell shows that this also differs from European experience, while in Europe the vast majority of cases are infants and children; in Assam the disease is very rare

before puberty. The fungus, writes Mr. Powell, would be classed by Sabouraud as the megalosporon. Both spores and mycelia are scanty as compared with the growth in *tinea tonsurans*; but he is quite unable to associate any definite clinical appearances with variations in the size of the spores or the character of the cultures.

As regards *tinea versicolor* it was with a feeling akin to shock, says Mr. Powell, that he read Dr. Bosanquet's statement that this affection was never found on the face—a statement with which most British dermatologists agree (including we may add Mr. Malcolm Morris, in the last volume of Allbutt's *System*). In Assam, on the contrary, it is very commonly situated on the face. Mr. Powell saw seven cases in one day, in all of which there was *T. versicolor* on the cheeks and chin, and in these cases he verified the diagnosis with the microscope. This difference in distribution he attributes to the fact that soap is an excellent cure and preventive of this disease. Mr. Powell notes that he has never seen a case of *tinea imbricata* in his district.

PLAQUE AT SINGAPORE.

THE situation of Singapore, placed as it is between plague-infected India on the one side and plague-infected China on the other, is such that it might fairly be expected to be particularly open to attack. This, however, does not seem to be the case, as we learn from an interesting article (*Lancet*) by Dr. Max. F. Simon, Principal Civil Medical Officer. In the year 1899, out of no less than 139,158 emigrants landed, only ten cases have been discovered, and all of these, we are glad to note, came from Chinese ports and none from India. Dr. Simon is inclined to speculate that the plague germ does not flourish well within a certain distance of the equator, that is, that plague is not a disease of the central tropics. In fact he sums up his experience of the behaviour of the disease as follows: "(1) That plague is not readily transmissible by sea far south of localities in which it is endemic or epidemic, and that should it in future years spread more towards the equator, it will do so probably by slow extension overland; (2) that when removed from its endemic environment, the disease is not at all readily communicable from person to person; (3) that the danger of conveyance of infection by cargo and baggage for any distance by sea, at all events below what is thought to be its boundary of latitude, is practically *nil*; (4) and—but this indication is submitted with diffidence—that, unless a patient has received a very strong dose of infection, or unless the morbid process in the body has reached a certain point prior to embarkation, when a patient leaves the infected environment and travels by sea towards

the central tropical zone the disease has a tendency to abort."

We note that Dr. Simon puts forward these views with a wise diffidence, and rightly so, we think, for plague has proved a very difficult subject to prophesy about.

BERI-BERI IN DUBLIN.

We commented last month on the fact that though beri-beri had been endemic in an asylum in Dublin for several years past, yet little or nothing had been done to throw much light on this somewhat mysterious disease, and we cannot say that a perusal of a recent discussion on the disease at the Royal Academy of Medicine in Ireland has done anything to induce us to alter our opinion. The discussion took place over Dr. P. Gerrard's paper on the disease. Dr. J. A. Scott said that during the epidemic of 1894 in the Richmond Asylum, he had made some investigations into the condition of the blood in the disease. A number of attempted cultures remained absolutely sterile; in other cases however, colonies grew, but the bacilli found indicated only air contamination, and also other colonies of cocci, which had a yellow colour on any medium. Professor McWeeney said there were very few details regarding the cultural characteristics of the organisms found. With regard to the improvements of the patients under anti-streptococcic serum, the injection of this serum might have produced a general phagatosis of a non-specific character, but this did not indicate any connection between streptococci and beri-beri. Mr. Conolly Norman (Superintendent of the Richmond Asylum) said that the organisms of Pekelharing and Winkler had been found in every patient's blood, but also in that of patients not suffering from beri-beri, and also in the air. Glogner* had found parasites in the spleen resembling those of malaria, and on this fact had founded his theory. At Tuscaloosa in the State of Alabama, cocci had been found in the blood, but they had not been described in detail. He agreed with the observation of Dr. Gerrard that patients often got relapses and died rather suddenly after apparently getting quite well. In a recent monograph on this disease Grimm had laid it down that beri-beri always commenced with fever.

While on the subject of beri-beri we may note that in the Annals of the Pasteur Institute (September 1898) Chantemesse and Ramond had an article on a disease strongly resembling beri-beri or at least the Dublin Asylum disease. The cases occurred in an asylum at Sainte-Gemme-sur-Loire; it attacked no less than 150 persons and caused 50 deaths. The malady is described

as beginning by an oedema of the skin, in the malleolar and pretibial region, and finally spreading over the whole body. At the same time there occurs palpitations, digestive troubles, girdle pains and a feeling of thoracic constriction. The reflexes become rapidly diminished and soon abolished; then comes paralysis of the extensors and muscular atrophy with altered sensation. M. M. Chantemesse and Ramond were delegated by the French Government to study this epidemic. They obtained two *post-mortems* in which they found a degenerative polyneuritis. They also succeeded in isolating a bacillus which resembled morphologically the *proteus vulgaris* of Hauser, and by injection of its cultures they were able to experimentally produce an ascending paralysis in animals. They do not, however, go so far as to say that this bacillus is the cause of the malady. It is a curious fact how in Dublin, in America, and in France this form of neuritis or beri-beri seems almost exclusively to attack the inmates of lunatic asylums.

CANCER IN INDIA.

It would be interesting and useful if we could ascertain to what extent cancerous diseases are prevalent in India. We all know that cases of malignant disease are by no means rare in our hospitals and dispensaries in India. Is it true, as Chevers wrote, that "they are by no means remarkably prevalent in India"? We had intended to make a note on the question here, but on looking up all available authorities, we could find little or nothing definite on the subject. It is curious that it is from Kashmir that we have heard most about cancer in this country, and this month we are enabled to give our readers an admirable article dealing with this very subject, one which has occupied our columns frequently in former years. In the very first volume of this Gazette, published over 35 years ago, there was an article on Cancer in Kashmir, by Dr. Emslie. Out of 5,080 dispensary patients in Srinagar no fewer than thirty had undoubtedly epithelioma, or, 1 in every 245 patients. Dr. Emslie, also as well as Dr. Neve, rightly attributed this to the universal employment of the *kangri*; he also suggested that the heat of the earthen vessel might act in the same way as the stem of a tobacco pipe does in producing epithelioma of the lips. Some years later Surgeon-Major G. C. Ross made observations to the same effect in these columns (October 1878).

PROFESSOR WRIGHT ON ANTI-TYPHOID INOCULATIONS.

PROFESSOR WRIGHT could not have chosen a more suitable time for the publications of the results of the anti-typoid inoculations which he was able to carry out during his tour in India in

*. Vide J. H. T. Walsh's article, *Indian Medical Gazette*, January 1894.

connection with the Plague Commission. Professor Wright was able to inoculate 2,835 soldiers out of a total, in the stations visited, of 11,295 men. This gives 2,835 inoculations against 8,460 men not inoculated. We find from the table given that there have so far been only 27 cases among the inoculated, while there have been 213 cases among their comrades who were not inoculated, or a percentage of 95 against 25; that is, cases of enteric fever were nearly three times more common among those who had not been protected. But this is not all the evidence in favour of the inoculations, for it is shown that many of the cases that did occur among the inoculated were very mild, and moreover many of those who were not protected were old soldiers, who had survived the most critical period of their Indian service as regards enteric, *viz.*, the first year or so. Care is also taken to deduct from the figures of the non-inoculated those who had previously had an attack, and who might fairly be considered immune. Again, there have been about several hundred subalterns inoculated, and as far as the figures obtainable by Dr. Wright go, he has only been able to obtain a history of five cases of enteric fever among them. Major Firth, R.A.M.C., also inoculated a batch of 22 young officers on board the Troopship *Dilwara* in October 1897, and as far as can be ascertained none of these officers have been attacked, whereas it is known that two uninoculated officers who came out in the same troopship have succumbed to that disease. Again in the 2nd Gordon Highlanders (now in South Africa); while no cases have been reported among the inoculated subalterns, two cases, both fatal, have been reported as having occurred among the uninoculated officers of the same regiment. Another point which must be borne in mind is that the inoculations were in some cases done during the prevalence of an epidemic, e.g., in the case of the Gordons no less than 30 cases had occurred in the regiment in the three months between their arrival in India and the date of the inoculations. In such case it is not unfair to assume that some of the inoculated would prove to have been incubating enteric fever at the time of the operations. This indeed proved to have been the case among the 3rd Hussars, of whom five cases of enteric fever occurred within nineteen days of the inoculation. These cases have, therefore, not been counted in the table quoted. Another interesting point is noted by Professor Wright which, though *a priori* not probable yet is worth mentioning, is that in one instance where the notes were taken by the Commanding Officer, there was apparently a falling off in the liability to malarial fevers among the inoculated.

On the whole Professor Wright may be congratulated on the very hopeful results that he and Major Leishman have been able to publish. The table now published gives us reason to hope

that similar results will follow as soon as the experiences of those inoculated among the army in South Africa have become available. The garrison of Ladysmith, for instance, where enteric fever is certainly rife, will, we may hope, be able to show equally good results though, considering the trials and difficulties undergone by that brave garrison, this may be perhaps too much to expect.

PLAQUE IN BRAZIL.

AFTER the usual preliminary stages of hesitation and doubt (the wish being the father to the thought) the Government of Sao Paulo, in Brazil, have officially declared the existence of plague in the city of Santos. About the middle of October a patient was admitted to the hospital at Santos with high fever, and died twenty-four hours after admission. The case was at first thought to be yellow fever. Shortly after two patients, Italians, living in the same street as the first case, were observed—both had inguinal buboes and fever. One of them died. Finally, three cases appeared in the house of a Mr. Milone, owner of a saloon in the centre of the city. One was that of a clerk, another of a servant girl, and the third was the daughter of Mr. Milone. The authorities made inquiries into the origin of the disease, and it was concluded that it has been carried to Santos from Oporto by the steamer *Rei de Portugal*. This steamer had left Oporto the day before that quarantine had been put in force in that city. Fifteen or twenty days after the arrival of this steamer there had been observed in Santos an extraordinary mortality among the rats, but examination of the dead rats did not disclose the microbe of plague. At the same time it was observed in the hospitals that many cases of buboes had come for treatment, but the buboes were easily cured, and none of the cases had fever. Yersin's serum was used but apparently, without any special influence on the disease.

A PASTEUR INSTITUTE IN JAPAN.

WHILE we in India are still only hoping for the establishment of a Pasteur Institute, Japan has had one in working order half a dozen years ago. Professor Kurimoto gives an interesting account of an epidemic of rabies in his district in Japan. In the years 1894-5 he observed 67 persons who had been bitten by rabid animals, but were not subjected to the Pasteur treatment. Of these 21 died, a percentage of 31.4, or more than twice the ordinary mortality in France, a fact which points to great potency of rabies virus in Japan. After this date the Professor's experience was more fortunate. From August 1894 till February 1899, he met with 254 persons, all of whom were treated in the Institute, and of these only 32 died, but many of them

had left the Institute before full treatment was carried out. Of the 222 persons who underwent the full treatment only four died of rabies. Professor Kuriimoto admits there is no remedy to prevent the virus when once it has had access to the nervous system, yet these figures afford a striking contrast to those in which he records the results in those not subjected to the Pasteur treatment.—*N. Y. Med. Journal.*

WE have much pleasure in publishing in this issue the article by Captain S. P. James, I.M.S., on an examination of the blood of residents of Travancore to ascertain the prevalence of filaria in them. We want many more such papers before we can be said to know anything of the geographical distribution of disease in India. With regard to the table quoted, we may add that the percentage prevalence of elephantiasis quoted has been ascertained by a special inquiry through the medical officers of dispensaries in the district, which was very kindly arranged for by Major J. W. Evans, I.M.S., the Durbar Physician, and may, therefore, be taken as approximately correct.

THE following is an explanation of the connection between Plague, Rats and Fleas. Simmond (*Ann. de l'Instit. Pasteur*, 1898, p. 625) noted that natives who carried a rat by the tail nearly always succumbed to plague if the rat was recently dead of that disease. After twenty-four hours there was no danger in touching it. The explanation, says Simmond, is simple. "Healthy rats free themselves from fleas by eating them, but when sick they take no notice of them, and the fleas only abandon the body when it is quite cold. So if a person handles a newly-dead rat, the fleas at once pass on to his person, but after twenty-four hours the fleas have migrated, and the dead rat can be handled with impunity." In much the same way Tiktine has shown that bugs can convey the parasite (spirillum) of relapsing fever. Bugs have also been shown experimentally to be conveyors of cancer.

THE Plague Commission's Report is long delayed, and plague policy is still being pursued in the dark as far as that Commission's work is concerned. Their views, writes the *Pioneer*, on some important points are still unknown, and perhaps uncertain. But in regard to inoculation, we understand that they have reached definite conclusions. They find it proved that inoculation sensibly diminishes the incidence of plague attacks; that it greatly diminishes the death-rate among the inoculated; that it does not confer any great degree of protection within the first few days after inoculation; that the protection lasts for a considerable

number of weeks and possibly for a considerable number of months; and that the best results can only be obtained with accurate standardisation.

WE understand that Professor Austen of the British Museum is bringing out a book on Mosquitos, with coloured illustrations.

THE death of Sir William W. Hunter is announced. Though not specially concerned with medical matters in India, his writings have been and will always be of value to medical men, as they contain so many valuable statistical and anthropological facts about the peoples of India. His death before his great "History of British India" is completed is a distinct loss to literature.

DYSENTERY is apparently the most prevalent of all zymotic diseases in Russia. The ratio is 220 cases per 100,000 of the population.

SIR LAUDER BRUNTON, Professor Clifford Allbutt and Dr. P. Manson have recently visited Rome, and spent some hours in the laboratory of Professor Celli and discussed their recent researches into malaria, and there "initiated reciprocal relations between the Italian Society for the study of malaria and the London Tropical School."

THE *Lancet* quotes from a missionary paper the statement that the Bishop Metropolitan of Calcutta has subscribed £ 25 towards the purchase of X-Ray apparatus for use of the medical missionaries in Peshawar.

WAR against rats has been proclaimed in Denmark. In the first three weeks of the campaign (the *Practitioner* tells us) over 19,000 rats were slain. It may hereafter be discovered that rats have after all some reason for their existence, beyond being carriers of plague.

CONTRIBUTORS who have sent in papers will please note that we have been obliged, owing to want of space, to hold over many interesting communications till next issue.

Reviews.

A Manual of Modern Gastric Methods—Chemical, Physical and Therapeutical.—By A. LOCKHART GILLESPIE, M.D., F.R.C.P.E. Edinburgh : OLIVER and BOYD, 1899. Pp. 175, 5s.

THIS is a practical account of how to examine the stomach and its contents in health and disease, and of the mechanical methods

used in the treatment of stomach disorders. The book illustrates the rapid pace at which scientific medicine is progressing. The conditions present in healthy digestion, the methods of obtaining the contents of the stomach and the examination of the fluid removed from the stomach or the vomit are fully described; while the quantitative estimation of the different factors that go to make up the total acidity is given in much detail. Were it not that the author has shown much judgment in emphasising simple methods, though at the same time giving full accounts of the more complicated chemical processes, one would feel tempted to warn him in the words of his own preface that "science can aid clinical knowledge, but cannot take its place. Gastric modern methods often afford us invaluable evidence as to the true nature of the disease and its probable cause, but treatment founded upon them alone is apt to enter into conflict with the living personality of the victim." As it is, the work can be recommended as a really useful and practical guide to the practitioner, and it contains many valuable hints. The short chapter on "The Mechanical Methods used in Young Children" by Dr. John Thomson of Edinburgh, whose book on Clinical Examination of Sick Children was favourably reviewed in these columns in February 1899, is good reading and deals principally with forced feeding or *gavage* and stomach washing or *lavage*. Dr. Lockhart Gillespie is already known as the author of "The Natural History of Digestion," one of the Contemporary Science Series, and the present manual is certain to increase his reputation as an accurate and scientific worker.

Manual of Bacteriology.—By ROBERT MUIR, M.A., M.D., F.R.C.P. (ED.), Professor of Pathology, University of Glasgow; and JAMES RITCHIE, M.A., M.D., B.Sc., Lecturer in Pathology, University of Oxford. Second Edition. Edinburgh and London: YOUNG J. PENTLAND. 1899. Crown 8vo, Pp. xvii, 564, with 126 illustrations. 12s. 6d.

THE first edition of this work which appeared in 1897 was favourably reviewed in these columns in March 1898. The early appearance of a second edition showed that the book deserved the praise that was then bestowed upon it. The alterations are not many, and there has been no change in the original plan of the book. The text has been carefully revised, and the results of more recent researches have been included. As a result the book has expanded by sixty-four pages and eighteen illustrations, and is more complete and up-to-date. Turning to the chapters of most interest to us in India just now, we note that the authors give Haffkine's researches on plague due prominence, and recognise that his preventive inoculations have been proved to be of great value. Rats are credited with playing the

most important part in distributing the disease over wide areas when once the disease has broken out. Ogata, it is said, has furnished evidence that flies and mosquitoes may spread the disease. Mittal, however, in his Johns Hopkins Hospital Report (Vol. VIII) has shown that there are really no facts upon which to base such an opinion as regards mosquitoes. The chapter on Malarial Fever is a good summary of the facts known, though hardly up to date in every respect. The application of Ross's discoveries of the life-history of *protozoa* (*Labbé*) to human malaria by Grassi and other Italians seems to have been unknown to the authors, though these researches were published in December 1897 and gave an account of a similar cycle in man and the mosquito to that discovered by Ross in birds and mosquitoes. In double staining dried specimens of malarial blood the unsatisfactory method of using eosin and methylene blue is advocated. Eosin and logwood are more controllable and give more permanent results. In appendix D the two questions—(1) is there an amœba peculiar to dysentery (*amœba dysenteriae*), and distinguishable from the amœbae present in other conditions, and (2) is this organism the cause of dysentery?—are said to have been practically answered in the affirmative as regards the endemic dysentery of the tropics. We would suggest that the authors should study the pages of the *Indian Medical Gazette* and other Indian publications where they would see that in the tropics these questions are by no means considered to have been settled in the affirmative. The reverse is rather the case and seems likely to continue to be so in the tropics. The book is well written, well printed and does credit to both authors and publishers who will, we are sure, see it through many more successful editions.

Practical Suggestions to the Medical Examiners of the New York Life Insurance Company.

A COPY of this little book has found its way to the Editor's table, and it deserves a few words of praise. Although the book is written for medical examinations in connection with a special Insurance Company, all medical men engaged in life insurance work will find the hints it contains useful. All is plain sailing with what are known as first-class lives, but many medical men, especially beginners, find it sometimes difficult to express a plain and unbiased opinion on lives below the first-class standard which do not, however, present any marked disease and yet are not wholly satisfactory. At the same time the examiner is warned not to be misled by palor, faintness, rapid pulse, etc., due to temporary nervous excitement or depression provoked by the examination itself in certain emotional persons.

The tables of relative height and weight on pages 15 and 16 will prove valuable.

Rough Notes on Remedies.—By W. MURRAY, M.D., F.R.C.P. (LOND.) Third Edition. London: H. K. LEWIS, 1899. Pp. 142, cr. 8vo. 3s. 6d.

AMIDST the rush of new remedies some of our most valuable old drugs are in danger of being swept away and forgotten. Dr. Murray does a real service in drawing attention to several new applications of some of these older drugs, in the treatment of common complaints. His useful notes, which we favourably noticed three years ago, have passed into a third edition, with new chapters on Liqueur Brandy, Specific Disease, Ptyalism in Jaundice and Turpentine Vapour in the treatment of Pneumonia. Thoroughly practical and suggestive, and written in a bright forcible style, they well repay perusal.

Hygiene of the Mouth.—By R. D. PEDLEY, F.R.C.S. (ED.), I.D.S. (ENG.) London: J. P. SEGG & Co.; Philadelphia, S. S. W.: DENTAL MANUFACTURING CO. Pp. 93. Illustrated. 2s. 6d.

THE importance of a healthy mouth in the maintenance of sound bodily health is now very generally recognised; but there are not too many books to tell the general practitioner how to attain this desirable condition, and how to prevent or control those dental diseases which are so widely prevalent and cause so much misery and ill-health. This is the object of this little book. Many useful directions are given on the care and preservation of the teeth, including that simple though important matter of how to use a tooth-brush. One of the illustrations strikingly shows that the movement of the tooth-brush should be *vertical* as well as horizontal in order to sweep out remnants of food from the interstices between the teeth. The importance of systematic examination of the mouth in every case of general ailment is rightly insisted on, and numerous examples are given of dyspepsia, dysentery and other bowel disorders, respiratory diseases and reflex-nervous affections, such as chorea, being associated with a diseased state of the mouth and rapidly disappearing when the mouth is set right, by the removal of the cause of irritation, or the supply of artificial teeth.

Growing Children: their Clothes and Deformity.—By E. NOBLE SMITH, F.R.C.S. (ED.) London: SMITH, ELDER & CO., 1899. 6d.

THIS pamphlet of twenty-one pages by this well-known authority contains valuable directions and hints on the proper form and materials for the clothes of children, attention to which would do much to improve the physical strength and appearance of our rising generation.

A Laboratory Manual of Physiological Chemistry.—By ELBERT W. ROCKWOOD, B.S., M.D., Professor of Chemistry and Toxicology in the University of Iowa.

THIS modest little volume has, as its title implies, been compiled for the use of the laboratory student of Physiological Chemistry.

The plan of the work reminds us of Reynolds' "Experimental Chemistry," being simply a series of experiments with an explanation of the facts which they go to prove. By following out these experiments in the laboratory, it is intended that a knowledge of the subject should be imparted to the student by his own observation. With this book at his elbow in the laboratory, and with the help of one of the larger works on the subject read at home, the student will find great encouragement in tackling a difficult subject.

The little volume contains a large amount of useful information given in a clear and concise form, and is worthy of a more pretentious exterior: it would seem to be, as it were, too retiring to attract readily the notice which it deserves. We confidently recommend it to the attention of every student and teacher of physiological chemistry.

The Surgical Diseases of the Genito-Urinary Tract: Venereal and Sexual Diseases.—A text-book for Students and Practitioners.—By G. FRANK LYDSTON, M. D. New York: THE F. A. DAVIS COMPANY. 1899.

IT is utterly impossible to deal fully with the vast amount of matter contained in this handsome and complete volume, consisting of over 1,000 pages, in the space allowed to us. It must, therefore, be sufficient if we indicate to our readers an outline only of the scope of this book. The volume is divided into ten parts as follows,—general principles, non-venereal diseases of the penis, diseases of the urethra, chancre and bubo, syphilis, diseases affecting sexual physiology, diseases of the prostate, of the urinary bladder, of the kidney and ureter, and of the testis and spermatic cord. The volume has no less than 233 illustrations, and is well printed in good type and on good paper. We can only deal with a few of these numerous subjects here; the chapters on Urethritis and Gonorrhœa are very good and occupy about 150 pages. Especial stress is laid upon the serious nature of this disease, which is too often thought by patients to be a harmless complaint. Our author quotes the *dictum* of Ricord to the effect "that anybody can tell when a gonorrhœa begins, but God alone can tell when it will end." He is not very keen on the so-called "abortive methods" of treating this complaint, but states that the best method is prolonged and systematic irrigation of the anterior urethra with permanganate 1 in 5,000, or 1 in 3,000, as warm as can be comfortably borne. He gives due

prominence to Noeggerath's theory as to the morbid results of latent gonorrhœa in the female. The chapters on Syphilis will well repay perusal, and especially those on early brain and nerve syphilis. An account is also given of Astley Bloxam's method of intramuscular injections of mercury, though Bloxam's statistics have recently been surpassed by those of more than one officer of the R. A. M. Corps. The chapters on Sexual Perversion are handled with all due delicacy and without unnecessary minuteness, and can be recommended to anyone desirous of information as to the management of these difficult cases. Many other equally interesting chapters must be passed over, but we must refer to those on urinary calculus for more than one reason. The remarks on the ætiology of calculus only serve to illustrate how little is after all known about the matter. Our author writes: "Heredity is a very important factor in the formation of calculus" (as also Dr. P. J. Freyer pointed out in our columns in January, p. 15). "The tendency to calculus disease in some families is very striking. Race seems to have its influence, the negro being peculiarly exempt. The Mongolian, Egyptian and the East Indian races are, however, subject to it. Sex is of great importance, calculi being met with twenty times more frequently in the male than in the female. Ten men die of the disease to one female; the disparity is explained by the difference in habits and diet, and the fact that the female urethra is so short and capacious that small calculi escape with the urine, instead of remaining to form nuclei for larger concretions." In another place our author says that "cold climates seem to favour the disease," an opinion which the great prevalence of the disease in India does not support. The important question of the prevalence of stone in connection with the dietetic habits of the people is but briefly touched upon. Our readers will remember the preliminary researches of Major A. E. Roberts, I.M.S., in this connection as given in his paper in the Transactions of the Indian Medical Congress in 1894. Our author makes full use of Dr. P. J. Freyer's writings on stone, but takes exception to Freyer's statement that where litholapaxy is not practicable perineal lithotomy should be performed for calculi up to three ounces weight in the adult. Lydston says that the statistics indicate the superiority of the suprapubic section in adult patients below middle age. As regards the best operation for children our author follows other British authorities in hesitating to follow the lead of the two Indian Surgeons, Keegan and Freyer, in claiming that litholapaxy should be the operation of election even in children. "It must be remembered that, in comparing Keegan's results with those of other operators, we are necessarily comparing the results obtained by the man who should be the most

expert with those obtained by operators of less experience and skill." This is the truth, and the whole truth, and not what is contained in the following sentence: "It must be taken into consideration that the statistics compiled by Keegan and Freyer from operations upon native Indian children are not to be taken as an accurate index of the results to be expected in operations by European or American surgeons . . . Climate and racial resistance probably make a difference in results. This is equally true of litholapaxy and lithotomy." This is the old and comforting fallacy which Freyer has several times exposed of some mysterious "racial resistance." The sentence quoted above shows that our author is not ignorant of the fact that the real difference consists solely in the superior skill of our Indian Civil Surgeons, a skill produced by their taking full advantage of the unrivalled opportunities afforded to them in the hospitals of India.

We have not space to linger further on the many other subjects contained in this most valuable treatise. We may note, however, in passing that there is no reference in the volume to that genito-urinary affection, sclerotising granuloma, which has recently been so fully discussed in these columns.

In conclusion we can thoroughly commend this handsome volume to our readers as a reliable and exhaustive treatise on diseases of the genito-urinary organs.

Diseases of the Nervous System.—By CAMPBELL THOMSON, M.D. London: BALLIERE TINDAL & COX. 1899.

STUDENTS of the present day may congratulate themselves on the advantage of this excellent introduction to the study of a complex subject. Dr. Thomson's experience as a teacher has enabled him to give a concise account of the cardinal symptoms of nervous disease, including a short description of the structures in which they manifest themselves and of the disturbance of function to which they are due. Nothing could be better than the brevity and clearness of the chapters on the regional manifestation of diseases of the nervous system—on the tongue, larynx, etc., etc. A great deal of what the student must already be familiar with is inevitably included, but the book is the better for this, and, indeed, we regret that the author has throughout assumed a knowledge of the anatomy of the central nervous system which the average student is far from possessing. It was well in the opening chapter to give an account of our knowledge of elementary nervous structure resulting from the work of Ramon y Cajal and others; but it was as necessary to give a brief description or even a tabular statement with diagrams of the course of the important tracts of fibres and cells of spinal

cord and brain. Something of this sort would very happily replace the conjectural physiology and vague psychology of the later paragraphs of this chapter on structure.

In the chapter on the muscles of the eye we would suggest that it is wholly inaccurate to speak of abduction and adduction of the eye. If the terms are really necessary "to avoid confusion" it were better to apply them to the movement of the cornea.

It is surprising that no reference is made to nervous symptoms associated with the ear, intimately connected as they often are with disease of the oculo-motor nerves. Bruce's work has made this very clear, and a chapter on the ear would not be out of place in a future edition of a book to which we wish success.

Current Literature.

SURGICAL EXTRACTS.

Spinal Cord Lesions in Tetanus: Prof. Matthes, *Zeitschrift f. Nervenheilkunde*, Vol. XIII (*British Medical Journal*) The writer recalls the fact that last year Goldscheider and Flatau brought forward experimental evidence to prove that definite changes took place in the anterior cornua in tetanus. They showed that swelling of Nissl's corpuscles occurred with enlargement, and sometimes disappearance of the nucleolus; these observations were confirmed by two necropsies on the human subject. Westphal also found similar lesions. Matthes gives notes on two cases of tetanus in which he examined the spinal cord. In one of them the appearances differed from Goldscheider's cases. Both were treated with Behring's serum. The cord of the first case was examined six hours after death, and that of the second four hours after death. In Case I there were extensive haemorrhages in the lower dorsal region, chiefly implicating the right half of the cord. The grey substance was almost entirely destroyed. The posterior horns were less affected than the anterior. Small haemorrhages were scattered in various parts of the cord. All the small blood-vessels were enormously enlarged. In Case II there were no haemorrhages. The brain was unaffected in both cases. In Case I the cord was hardened in 95 per cent. alcohol and was cut either in paraffin or collodion. In Case II the cord was treated first with formal, and afterwards kept for two days in alcohol. Sections were cut with the cord embedded in gum arabic or paraffin. The preparations were coloured with Nissl's methylene blue or else with thionin. Several of the anterior polar cells appeared normal; others showed swelling of the cell granules as described by Goldscheider. Some of Nissl's corpuscles showed a process of fine granular disintegration, affecting only the central part. The cells in general showed a diminution in the number of processes. The condition of the nucleoli varied considerably. Some were perfectly normal, whilst others appeared to have lost their rounded form and were darkly stained; this was especially noticeable in the cells showing the fine granular disintegration. Goldscheider has observed a similar distortion in the form of the nucleolus. The extensive haemorrhages in Case I are believed by the author to be due to hyperæmia and not to the direct effect of the tetanus poison. It appears to be doubtful at present whether any specific changes due to the tetanus poison exist. Berger has described very similar lesions in cases of paralytic dementia. The almost negative result in

the second case would, according to Goldscheider, point to the beneficial effect of the serum treatment. Matthes reserves his judgment for the present, and only wishes to point out the slight changes which he found in his cases.

The Surgical treatment of non-malignant Diseases of the Stomach: Prof. Petersen, *Deutsch. Med. Wochenschrift*, June 1st and 22nd 1899 (*British Medical Journal*).—In these papers are published the results of all the operations for non-malignant gastric affections, amounting to 76, which have been performed in Czerny's clinic in Heidelberg. Fifty were for simple ulcers and their sequelæ. Pyloric stenosis with great motor deficiency accompanied by evacuation and a permanent diminution of the quantity of urine is an absolute indication for operative interference. When internal treatment fails (1) severe atonic motor deficiency; (2) profuse haemorrhages; and (3) severe gastralgia with uncontrollable vomiting, whether depending on recent ulceration, cicatrices of ulcers, perigastritis, or adhesions, also demand surgical treatment. The same is true of many of the complications of cholelithiasis, such as pyloric or duodenal obstruction and adhesions, and also of the results of drinking caustic fluids and of the rare tuberculous stricture. From the point of view of mortality, the cases can be divided into two periods: 32 before September, 1895, with 7 deaths (22 per cent.), and 44 after that date, with only 1 death (2.3 per cent.). This great improvement is to be explained by (1) the operation having been performed earlier, when the patients were in better condition; (2) greater experience in the choice of cases, and especially the substitution wherever possible of gastro-enterostomy or pyloroplasty for excision and resection; (3) improved technique, especially the use of Murphy's button, which has reduced the time required for the operation from $\frac{3}{4}$ to $\frac{1}{2}$ hour, allowed the patients to be fed by the mouth directly after the operation, lessened the chance of subsequent pneumonia and abolished the danger of the formation of a "spur." The permanence of the results in pyloric stenosis depend chiefly on the kind of operation. Thus gastro-enterostomy (generally posterior) gave the best results, 25 out of 37 cases being completely and finally cured, while occasionally after pyloroplasty, gastro-enterostomy had to be performed later for recurrence of the symptoms. Circular resection of the pylorus and excision of the ulcer were the least satisfactory both as regards the immediate and remote results. It appears that tetany, when of gastric origin, can be cured by a suitable operation. Some of the operations for haematemesis were of special interest. In three, where the haemorrhage was parenchymatous (?) due to vicarious menstruation) surgery failed entirely. In one other, with typical symptoms of gastric ulcer, gastro-enterostomy plus partial excision of the ulcer arrested the haemorrhage at once, and a similar result was obtained in another by gastro-enterostomy alone. If this last operation should prove to be the rule, it would be a great advance in treatment, as one of the chief arguments against operating for haematemesis is the frequent difficulty in finding and the time lost in searching for the bleeding point.

J. H. T. WALSH.

Correspondence.

. SNAKE CHARMERS AND THEIR WAYS. To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—Would you do me the favour of inviting replies from your readers to the following questions, at as early a date as possible.

1.—Do the snake charmers in your district use any means of preventive inoculation against snake-bite, e.g., do they rub poison into the backs of their hands, or do they swallow poison systematically?

II.—Do you know of any cases of death from snake-bite in your district among snake charmers? Or of any cases of bites received by these men from venomous serpents, which have nevertheless been followed by recovery?

III.—Do you know of any snake charmers who bear on their hands or elsewhere marks of old bites, from which they claim to have recovered?

IV.—Can you afford any other information which will throw light on the habits of, or precautions taken by, this class of men?

V.—Have you ever witnessed a fight between a mongoose and a venomous snake? Was the mongoose struck? What evidence was there that it was struck? Did the snake get a fair hold? How did the mongoose free itself? Did you find any wounds on the mongoose after the fight? Did the mongoose die, and if so, how long after the fight? Did it live? Did you notice whether the mongoose ever jumped sideways, or did it always dodge its enemy by backward and forward rushes? DID THE MONGOOSE WHEN VICTORIOUS EAT THE SNAKE'S HEAD?

Those who have not witnessed a fair fight between a full-grown mongoose and a cobra will find it will repay the trouble to do so (any snake-man will carry it out for them). The fight is best seen by placing the two animals in a fairly large empty bath-room, half the door of which is blocked for safety's sake with a box, over which the fight can be watched. If this cannot be arranged, the fight can take place in the open, the mongoose being kept from escaping by a string tied round the waist.

I have lately been at work on the extent of immunity acquired by the mongoose, and I am anxious to obtain as much collateral information on the subject as possible. I would specially ask that correspondents would distinguish between hearsay evidence and what they have actually seen and carefully watched; there is too much of the former style of evidence going about, and it does not tend to the elucidation of the facts of the case.

If the Editor will permit replies to be printed in the Gazette, I will consider it a great favour; if not, or in any case, I will be most grateful for any replies sent direct to me.

Yours faithfully,
R. H. ELLIOT.
Capt., I.M.S.,

COONOR, THE NILGIRIS, }
January 20th, 1900. }
(We shall be very pleased to print replies and to forward them to
Capt. Elliot.—Ed., I. M. G.)

ANCHYLOSTOMA IN MADRAS.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—In 1895 I had occasion to note the prevalence of the anchylostoma duodenale in Madras city for the Indian Medical Congress. Since then I have been in three stations, and as the distribution of the parasite in India is still under investigation it is probably worth while recording one's experience of it since. Perhaps some day a collective investigation will be carried out on the lines of those instituted by the B.M.A. Of two stations I have not exact figures, but I can assert with certainty that the parasite is common in the Kistna District, in and around Masulipatam, co-existing with beri-beri in some cases. Of Bellary, which is a high and very dry climate, and in that differs from the moister maritime one of Masulipatam, I cannot speak with certainty as I was not there very long; but my impression is it is not common though it certainly exists. Here in Coimbatore, where I have been for over a year, the climate is essentially continental, and of an average humidity of about seventy-five. The average daily population of the jail last year was 1,135; and the average daily attendance at the municipal hospital one hundred and sixty-eight, being made up of one hundred and forty-four out- and twenty-five in-patients. One had therefore in over a year no lack of material on which to draw, and taking as the indication for examining the stools either (1) anaemia, or (2) dropsey, or (3) both, I have only rarely had occasion to examine them, and have found only ten cases in all in which ova were present. Of these six were residents of Coimbatore itself or of villages within a dozen miles: one had been wandering about for some time before admission: and three came from Palghat, on the Malabar side. One of the residents was a man who had been two years in the jail, and in his stool washings I found one female anchylostoma. On the other hand, in the fifteen other post mortems I have made in the jail here, I have found only one of the cases having any, and they being two or three ascarides and hundreds of oxurides. This is a very interesting contrast with the state of things found in Madras and Cannanore, and though only negative evidence, when one has been on the look out for the worm, it enables one to say with some confidence that at the present time it is almost certainly not a serious cause of sickness in this part of India. The water of the whole district is phenomenally hard from the presence of chlorides of lime and magnesia.

COIMBATORE: S. INDIA, }
20th January 1900. }
C. L. WILLIAMS, M.D.,
Capt., I.M.S.,
Ag. Dist. Medical & Sanitary Officer.
(We are arranging to start such an inquiry, and hope to issue a list of
questions with hints as to methods in our April issue.—Ed., I. M. G.)

MOSQUITOS AND MALARIA.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—It would be an excellent thing if some one would work out the connection between rainfall and malaria; the difficulty would be to exclude old cases of malaria, in whom fresh attacks of fever may be brought about by slight causes at any time of the year, and to include only fresh infections. In Quilon we have most fever at this time of year (November-December); for not only are the rains just drying up, but a constant land wind blows, bringing with it crowds of mosquitos from the cultivated areas inland. The other morning I counted fifty-five spotted winged mosquitos which had settled during the night on the outside of my mosquito curtains. During the S.-W. monsoon we have fewer mosquitos and less fever because the wind blows off from the sea. I am almo-t sure that the increased danger of the dreaded "landwind" of these parts is partly on account of the increased number of mosquitos it brings with it I do not think that it is generally known that at least the culex genus of mosquitos are cannibals in their food. If one places in a bottle of water some large culex larve along with some small ones of other species, in a very short time all the small ones will have been eaten up by the large ones. I have frequently watched a large culex larva devouring another larva. They take them in their jaws, generally by the tail end, and gradually suck them in till at last the head and all is gone. It is very interesting to watch this, and I have frequently thought that to this cannibal habit may be attributed the fact that anopheles larve are seldom or never found along with culex larva; for culex larve are strong, large and vigorous compared with most anopheles larve, which are delicate and would have little chance in the struggle for existence against the culex genus. It would, therefore, appear that the culex mosquitos are an advantage rather than the reverse (unless they are proved to carry some other disease) by helping to exterminate the malaria carrying mosquitos.

Yours, &c.,
S. P. JAMES,
Capt., I.M.S.

REGIMENTAL MARCHING.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—I see in the January number of the Indian Medical Gazette that Captain Macnab refers to the march of the Guides in the Malakand Field Force, and states with pride that they did thirty-two miles in sixteen and three-quarter hours, including halts. During the Mekran Expedition of 1895 the 3rd Biluch Regiment started one morning at 6.30 A.M. from Murgachaband, and reached Mastung—twenty-seven and half miles away—at 3.30 P.M., doing the twenty-seven and half miles in seven and quarter hours' actual marching, or in nine hours including halts. They marched in the heat of the day, and not a single man fell out, although they were in heavy marching order, with great coats and seventy rounds of ammunition per man. At the end of the march the rate was timed, and it was found that the men were marching at four miles an hour then. In the Uganda Expedition the 1st Biluch Regiment marched one hundred and forty miles in five days, carrying their kit, ammunition and rations.

Yours, &c.,
W. H. COX,
Lieut., I.M.S.,
3rd Biluch Regt.

[This is certainly first class marching, of which any regiment might be proud. We have heard of a grand march of the 15th Sikhs, and perhaps our readers will send us other similar instances of such marching powers.—Ed., I. M. G.]

CALMETTE'S SERUM.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—In your November issue you published a report by Major Lyons, I.M.S., on the Calmette serum for snake-poison. He quotes the price at which this serum is sold for Government use as 2s. per dose of 10cc.; but I think it should be noted that the Pasteur Institute is apparently not prepared to sell the serum at that price for use in individual Government hospitals, as I find that for 14s. I have only received four doses of 10cc. each, and in reply to my letter the Institute quotes the rate at 5 francs per dose.

I should also add that all orders for serum should apparently be addressed to "M. Pierre Charriol, Conseiller du Commerce extérieur de la France, Calcutta," and not direct to Dr. Calmette.

Yours, &c.,
VICTOR E. H. LINDSAY,
Capt., I.M.S.

BAKLOH, }

12th February 1900. }

[We have recently obtained the serum from Messrs Smith, Stanisstreet & Co., Calcutta, at Rs. 5 per phial of 10 c.c.—Ed., I. M. G.]

Service Notes.

CAPTAIN P. B. HAIG, I.M.S., has been specially recommended for good service in Uganda. He has been Medical Officer of the 1st Battalion, Uganda Regiment, since September 1898.

THE January Number of *Cornhill Magazine* has an article entitled "The Ways of a Military Hospital," which is worth reading, and is amusing.

LIEUTENANT-COLONEL DOBIE, I.M.S., who was well known as an amateur actor in Madras, has, we understand, taken up the stage as a profession, and is now appearing in London in a play at Charles Wyndham's Theatre.

MAJOR W. R. EDWARDS, I.M.S., Civil Surgeon of Quetta, has been appointed Medical Officer on the Staff of Field-Marshal Lord Roberts in South Africa, and has sailed for the Cape. Major Edwards was formerly surgeon to Lord Roberts when Commander-in-Chief in India.

FIRST FIELD DRESSINGS.—At the meeting of Military Surgeons of the American Army, held recently at Kansas, Colonel Nichols Senn read a paper on "The First Aid Package in Military Surgery." He remarked that it was fortunate for humanity, but unfortunate for military surgery, that no great wars had occurred since antiseptic surgery had come in general use. The first tentative efforts to practise asepsis in military surgery were made during the Russo-Turkish War, when the foundation was laid of modern treatment of gunshot wounds. It was during that war, too, that the too common practice of searching for and extracting bullets on the battle-field was so violently opposed.

Military surgery, he said, has been and will always be emergency surgery. Absolute attention on the field is out of the question. The value of the first aid dressing applied in the fighting line is as yet not generally admitted; many French military surgeons do not approve of it. England, in 1855, first ordered the use of this first field dressing. Senn said that the best first dressing should consist of boracaliepic powder, two strips of lint, a ganz handkerchief, two safety pins, and between this and the outside impermeable cover, two strips of adhesive plaster an inch wide and eight inches long. This first dressing must be applied as soon as possible after the receipt of the injury. This first dressing should not be disturbed unnecessarily, but any defects should be corrected at the first dressing station.

LIEUTENANT-COLONEL P. F. O'CONNOR, I.M.S., of the 6th Bengal Cavalry, has been appointed P. M. O. of the Malakand Field Force. The *British Medical Journal* describes him as "Medical Officer to the Bengal Cavalry" (*sic*).

MAJOR R. CROFTS, R.A.M.C., gets the D. S. O. for service in Sierra Leone. He served in the Expedition against the Tebas in Lagos in 1892.

THE *Lancet* correspondent in India has the following sensible remarks in his letter (January 6th):—"The common sense view of the present situation would appear to be that the supply of suitable men from home must be obtained by keeping the service attractive. Better terms must be offered, especially to the younger men, and any further encroachments on the civil appointments of the I. M. S., for the benefit of native members, would certainly not tend to increase its popularity with Europeans."

This is the matter in a nutshell—if the I. M. S. is to continue to get the best men from the schools, it must continue to be made attractive to them.

PROFESSOR OGSTON does not expect to get back from South Africa in time to preside at the section of "Army, Navy and Ambulance" at the July meeting of the B. M. A., and has therefore resigned the presidency of that section. The most extraordinary part of the whole affair was his nomination for that post. Rightly or wrongly the R. A. M. C. look upon him as no friend. This being so, it was hard to see how the new section could be successful. As it is, it is unlikely that enough men will be back from the war in time to take part in the meeting, and a section supported by a handful of men on furlough or retired would

scarcely be a success. The Council of the B. M. A. would be well advised in postponing the inauguration of this section till the following year.

AT last a messing allowance has been sanctioned for R.A.M.C. messes in India.

LIEUTENANT-COLONEL F. C. BARKER, I.M.S., has been permitted to retire from the service. He was Presidency Surgeon, Bombay, and has been on furlough (*m.c.*), since December 1898.

In the Indian Army List for January all Lieutenants, I.M.S., appear in one list, and not under headings, Bengal, Madras and Bombay, as do all officers above that rank.

CAPTAIN A. A. F. MCARDLE I.M.S., is appointed Surgeon Naturalist for the Indian Marine.

DR. HORNABROOK, a Civilian Surgeon, was reported as wounded at Ladysmith on 6th January.

MAJOR W. H. W. ELLIOT, I.M.S., and Captain G. H. Frost, I.M.S., are among the garrison at Ladysmith. They went out with the Indian Contingent in charge of No. 69 N. F. Hospital.

LIEUTENANT C. H. B. ADAMS-WYLIE, I.M.S., has gone off to South Africa, in medical charge of the transport *Upada*, which sailed for Durban on 28th January. Civilian Surgeon Dr. Lavertine also accompanied it.

CAPTAIN W. D. SUTHERLAND, I.M.S., Civil Surgeon of Saugor, C.P., has been obliged, on account of ill-health, to take furlough to Europe. As Captain Sutherland will spend most of his leave in France and Germany, he has promised to send us accounts of medical matters in the large Continental Hospitals, and to report for us the forthcoming International Medical Congress in Paris.

IN the discussion on scarlet fever in India in our columns, somehow it was overlooked that Surgeon-General Bradshaw, C.B., I.M.S., had discussed this question in our columns so long ago as August 1871; *a propos* of cases he had met in Siula, when Surgeon to the Commander-in-Chief.

MR. H. ZORAB, who has sailed for the war in the Bihar Company of Lumsden's Horse, is the eldest son of Lieutenant-Colonel Zorab, I.M.S., Civil Surgeon of Cuttack.

THE January Number of our contemporary *Archiv für Schiffs und Tropen Hygiene* contains abstracts of the following articles either published in our columns, or by I. M. S. men: Mr. Haffkine and Major Bannermann on "Plague Prophylactics;" Major Ditmrook's article on "Control of Plague in Bombay;" Major G. M. Giles' article on the "Free Stage of the Anchylostoma;" Major V. Harrington's note on "Guinea Worm;" Capt. Foulke's note on the "Treatment of Guinea-Worm by Injections of Alcohol;" Major W. J. Buchanan's articles on "Terminal Dysentery" and on "Sprue;" Major Baker's note on "Litholapaxis in India;" and Mr. A. Powell's "Observations on Yaws."

A REVIEWER in a home medical paper calls Dr. Keegan's book on Rhinoplastic Operations "*The nasal architect's code mecum*." We hope to review this book in our next issue.

WE learn from Sir William MacCormack's account of the first Tugela battle that Capt. M. Louis Hughes, R.A.M.C., was wounded by a bullet which severed the innominate artery, and that Major Brannigan's wound was in the foot. Sir William also records his helping Major Mallins at an operation for laparotomy in a well-equipped hospital, which had been the same morning in full activity eight miles away.

"I would like to draw attention to these facts, writes Sir William: (1) the skill and care displayed in treating compound fractures and injuries requiring calm attention and time under heavy fire. (2) The skilful and efficient way in which serious major operations were performed on the same day as the battle by the medical officers of the field hospitals. (3) Eight hundred wounded were cleared off the field by 6 p.m., the action having finished at 2 p.m. (4) By midnight on the second day after the battle, the last wounded man had left the front and was on his

way to the base and the ships. (5) Eight train loads have been taken away in hospital trains in two days. I know that the army has the greatest confidence in the medical corps, and feels that all has been done for the wounded has been done."

NOT the least advantage, from a service point of view, of the appointment of men like Sir Wm. MacCormack and the other Consulting Surgeons is, that their words will carry weight, and that the good work done by Army Medical Officers here, as on other battle-fields, will receive due recognition at the hands of the profession and the public.

The following piece of surgery would satisfy even Professor Ogston:—"Major Mallins performed the operation; he made a median incision below the umbilicus. After opening the abdomen a slight facial colour was perceived. The pelvis was full of fluid blood, and on handling the intestine, gas bubbled through the blood. After a careful search two wounds were found in the ileum. They were closed by Lambert's suture, applied in the long axis of the bowel. This morning the condition of the man was favourable. The operation was done in a tent with a very poor candle light and under all the difficulties incidental to the situation."—(Sir Wm. MacCORMACK.)

It is somewhat strange that the War Office is only offering thirty appointments in the R. A. M. C. at the February Examination. Considering the extremely undermanned condition of that service and the present necessities, it might have been thought a good time to get in a large number of medical men. The splendid conduct of the R. A. M. C. in South Africa has made it more popular than ever it has been before, and as we see dozens of men offering for temporary employ during the war, it was surely the time to make an endeavour to fill up every vacancy.

The following extract from a lecture delivered by Major-General Beresford Lovett (in the current number of *The Journal of the United Service Institution of India*) is interesting:—"The native troops on service were given half a seer of rice daily (this was at the beginning of the century) and that was all. Europeans had rations of biscuit, salt beef, and occasionally mutton and always arrack. They had two tots a day—one immediately after arrival at the camping ground, and another in the evening. General Wellesley's anxiety that his Europeans should always have his arrack is most marked in the Wellington despatches. The arrack was, I presume, ordinary country spirit, a most vile decoction. But sanitary science was utterly unknown a century ago, and whole European regiments disappeared under the influence of bad quarters, intemperance and the sun. The survivors were those who were arrack proof within and sun proof without. The Medical Department was undermanned, so much so that, after Assaye, some of the wounded had to wait a whole week before their wounds were dressed. Medical science was then only just emerging from the veriest empiricism. In the military hospitals what with no anaesthetics, no antiseptic treatment, nor careful nursing, the scenes must have been awful. Truly the modern soldier owes much to science."

THE following is an infantry officer's view of the question of ambulance on the battle-field. It is taken from the essay by Lieutenant-Colonel J. G. Ramsay of the 24th Punjab Infantry. (*Journal of U. S. I. of I.*):—"In the first place the number of field stretchers per battalion of infantry is far too small, and should be increased to two per company. Under existing regulations this involves taking 32 men from the ranks, or half a company. The stretcher-bearers form a good target for the enemy, and casualties among them takes more men from the ranks, still further reducing the fighting efficiency of the force. Again the men selected for stretcher-bearers cannot be spared in peace time to be let off all duties to practise the carrying of stretchers; they are therefore novices to the work. We would propose a bearer battalion in each command, say, ten companies of 100 men, in all 1,000 strong, composed of such men as are now found as Kabars in the Frontier Force Regiments, who would probably enlist if sufficient inducement was offered them, such as pay equal to the sepoy for stretcher-bearers, who would run equal risk in action with the sepoy, and who would be the first line of the bearer corps. And for dandy bearers, the second line, a somewhat lower pay, say, Rs. 7 a month, the men being promoted from the lower to the higher grades. The training of such men would include first aid to the wounded. If we allow two stretchers per company on service, a battalion would require 32 bearers, a brigade 128 bearers; two field hospitals, with 20 dandies each, would require 160 bearers, that is, in all, 288 bearers per brigade. A division in the field would thus require a battalion of the bearer corps, of which four battalions from the four commands would be available. The corps would be organised in companies

and be employed in carrying the sick in cantonments and in native regiments as attendants on the sick."

IN spite of what is said above about the R. A. M. C., it is strange and disappointing that only 25 men appeared for the 50 vacancies in February. Medical men will apparently volunteer in dozens for active service, but will not enter the R. A. M. C. as a career. It is the professional unattractiveness of that service that keeps medical students from entering. A young officer in a Station Hospital is a "Subaltern;" in a Civil Hospital he is a "colleague." There is much difference.

Gazette Notifications.

GOVT OF INDIA.

The services of Captain A. E. BERRY, I.M.S., are placed temporarily at the disposal of the Chief Commissioner of the Central Provinces. The services of Captain FLEMING, I.M.S., are placed at the disposal of the Government of Madras.

The services of Captain H. M. MOORE, I.M.S., are placed at the disposal of the Government of Bombay.

The services of Captain J. PENNY, E. R. ROST, and of F. H. L. HAMMOND, I.M.S., are placed temporarily at the disposal of the Government of Burma.

The services of Captain J. C. ROBERTSON, I.M.S., are placed at the disposal of Bengal for plague duty.

The services of Captain J. S. STEVENSON, I.M.S., are replaced at the disposal of the Military Department.

The services of Captain H. P. HOW, I.M.S., are placed at the disposal of the Government of Madras for plague duty.

The following Lieutenants, I.M.S., to be Captains, I.M.S. (26th January): A. A. P. MCARDLE, J. M. WOOLLEY, C. A. LANE, T. B. KELLY, J. H. HUGG (D.S.O.); W. H. KENRICK, C. H. S. LINCOLN, C. H. WATSON, R. H. PRICE, G. O. F. SEALY, and R. BRYSON.

Captain A. E. BERRY to the medical charge of the Bundelkund Agency. Senior Assistant Surgeon and Honorary Lieutenant R. H. DOLBY, to the Honorary Rank of Captain.

1st Class Assistant Surgeon W. H. HARDING, to Senior Assistant Surgeon with Honorary Rank of Lieutenant.

Captain S. E. PRALL, I.M.S., 1st Battalion, Bombay-Baroda Railway Volunteers, resigns his commission.

The services of Captain G. BIDIE, F.R.C.S., I.M.S., and of Captain C. G. WEBSTER, I.M.S., are placed at the disposal of the Government of Madras.

Captain W. E. A. ARMSTRONG, I.M.S., is appointed to act as an Agency Surgeon, 1st C'ass, and posted to Quetta as Civil Surgeon (*vice* Major W. R. EDWARDS, I.M.S., gone to S. Africa on Lord Roberts' Staff.)

Captain J. N. MACLEOD, I.M.S., to be Agency Surgeon, 2nd Class, and posted to Nepal.

Lieutenant-Colonel ANDREW DUNCAN, I.M.S., and Lieutenant-Colonel F. C. BARKER, I.M.S., are permitted to retire from the service.

Majors to be Lieutenant-Colonels, I.M.S.

Bengal—G. W. P. DENNYS, J. W. U. MAGNAMARA, J. SYKES, J. F. TUSBY. Madras—J. C. MARSDEN, F. C. REEVES, J. L. POYNDER Bombay—C. F. WILLIS.

BOMBAY.

Lieutenant-Colonel McCLOUGH, I.M.S., to be Honorary Surgeon, Sind Volunteer Rifles, *vice* Lieutenant-Colonel BRADBIDGE, resigned.

Lieutenant-Colonel C. F. WILLIS and Captain D. C. JOHNSTON, I.M.S., respectively, delivered and took over charge of the office of Deputy Sanitary Commissioner, S.R.D.

Lieutenant H. KIRKPATRICK, I.M.S., is appointed to officiate as S.M.O., Port Blair, during absence of Major H. HUDSON, on privilege leave.

Lieutenant-Colonel W. P. CARSON, I.M.S., to be Civil Surgeon of Belgaum.

Major C. F. WILLIS, I.M.S., to be Civil Surgeon, Karwar.

BENGAL.

Captain C. R. STEVENS is appointed Civil Surgeon of Arrah, but to remain till further orders at Bhagalpur.

Captain L. ROGERS, I.M.S., is appointed Deputy Sanitary Commissioner, Met. and East Bengal Circle.

Captain R. H. MADDOX, to be Civil Surgeon of Balasore, but to remain at Saram till further orders.

Lieutenant T. HUNTER, I.M.S., to have medical charge of the civil station of Alipur Duars, in addition to his military duties.

Major A. W. D. LEAHY, I.M.S., is appointed from 6th January to be Civil Surgeon of Darjeeling.

Lieutenant-Colonel LEWIS, on leave, is appointed to be Civil Surgeon of 24-Parganas.

The services of Captain W. W. CLEMESHA, I.M.S., are placed at the disposal of the Sanitary Commissioner, Bengal, for plague duty.

N.W. P. AND OUDIL.

Major L. G. FISHER, I.M.S., to the visiting medical charge of Banda.

Lieutenant-Colonel F. H. SWEENEY, I.M.S., Civil Surgeon of Benares, to hold visiting charge of Jaunpur.

Major F. W. STEVENSON, I.M.S., to plague duty in the Allahabad District.

Captain W. YOUNG, I.M.S., to act as Superintendent of the Central Jail, Allahabad. (This cancels the appointment of Captain AUSTEN, I.M.S.)

Captain C. MILNE, I.M.S., to be Civil Surgeon of Naini Tal.

THERAPEUTIC NOTES.

We have received specimens of Messrs. Burroughs, Wellcome & Co.'s Permanganate of Potassium and Alum "Soloids." Each soloid contains three grains of the permanganate and five grains of alum. Such a preparation must be of service as a ready means of carrying about the constituents of an antiseptic and astringent preparation, which can be used in a great variety of circumstances.

We have received a bundle of reprints dealing with the drug treatment of diabetes, a subject of interest in India where the disease is common. A drug which enjoys much favour now in America is eulexine, which is our old friend jambul under a new name. The Thomas Pharmaceutical Company, of New York, has brought out an elegant preparation of it, viz., liquor eulexini aromaticus. Jambul has been used in India for many years in the treatment of diabetes, and an admirable preparation like this should now attract attention to the drug.

Quinine and Haemoglobinuria.—Dr. I. H. F. Kohlbrugge, of the Dutch Indies, has the following remarks (*Journal of Tropical Medicine*) on the use of quinine in certain cases of idiosyncrasy:—"We are thus on the horns of a dilemma. Malaria and quinino may originate haemoglobinuria, which is so weakening to the patient, but we cannot possibly do without quinino, especially as febris biliosa haemoglobinuria has undoubtedly often been cured by quinine. Though haemoglobinuria is very seldom caused by quinine, still we must admit that in a few persons quinino does have that effect. Every tropical practitioner has come across patients who could not take quinino. Should such patients in addition be cachectic, then quinino is to be contra-indicated, and the patient treated by a change of locality. Should the fever be of a remittent character, quinino should also be avoided. But in the case of a pure intermittent, or where a change of locality is out of the question, what is he then to do? I have some years ago solved this riddle, for I found that it was only those preparations of quinine prepared with inorganic acids that originated intoxications, but that the tannate of quinine could be taken by persons possessed of a marked idiosyncrasy, in the largest doses, without any evil effect, particularly if the astringent effect (not always desirable) was neutralised by suitable diet massage or other means. The tannate of quinino may also be used for fever occurring in pregnant women."

In the *Bulletin Général de Thérapeutique* for September 8th, 1899, is an interesting review of the Treatment of Tetanus, by M. le Docteur Ch. Amat.

After giving a summary of the bacteriology of the disease, and of the most recent views on its causation, the author enters upon the discussion of its treatment by the use of anti-tetanic serum. Although not a cure of the disease, Dr. Amat regards its employment as of the most vital importance as a prophylactic measure. He says the serum should be used in all cases of wounds in which there is the least reason to fear or to suspect the onset of tetanus. He observes that it is difficult to estimate its virtues in the case of human tetanus, but that M. Nocard has shown that in the disease, when affecting horses, tetanus being very rare amongst these animals, the effects of the injection of the serum are most striking. It is maintained that by this means 40 per cent. of deaths are avoided amongst horses. In order to prevent the occurrence of the disease, two injections, each of 10 or 20 c.c. of anti-tetanic serum, are made at an interval of two or three days. In this case serum of considerable strength is employed. Another mode of treatment is by the injection of a dose of less active serum every day during five days. The author states that, used in either of these ways, anti-tetanic serum is certain in its effects and absolutely harmless. The poison of tetanus would appear to have a special affinity for the nervous tissues, and especially for those of the brain. For this reason it is stated that success is more likely to follow the injection directly into the brain, in active cases of the disease, of anti-tetanic serum than that of the same liquid into the blood or under the skin, although large quantities may be conveyed to the system by either of these routes. So long, it is said, as difficulty in swallowing has not supervened, just so long may success be hoped for. But the earlier the operation is performed the greater the certainty of success being attained. To secure these ends, a previous rhinophym operation will be necessary.—*Treatment*, January 11th, 1900.

Functional Disorders of the Heart.—In discussing the treatment of palpitation, T. Clifford Allbutt, in his "System," says: "During the attack it consists in recumbency, warmth to the legs and feet, and such stimulus to the vagus nerves as ether, ammonia, valerian, smelling salts and hot applications to the cardiac region; remedies which are rather to be recommended than alcohol. Belladonna is also better avoided, and digitalis, if an occasional ally, is not to be trusted."

If there are no acute attacks, but rather the less violent, chronically recurrent form, he advises that the treatment, if addressed still to the vagi, may well be addressed also to the accelerators, especially if the pupils be dilated and the face flushed, and thereby, excitement subdued. As palpitation, if consisting partly in defect of central control, is nearly always set

up by eccentric causes, attention should be paid to the general management, such as regulation of the bowels or other secretions, attention to piles, uterine disorders, or overwork; temperance in food and avoidance of alcohol; moderate exercise, cold baths, and regular hours of sleep. At time, such sedatives as aconite and the bromide of soda, ammonia, or camphor, may be needed. Aconite has served us well in many such cases, and its use, cautious as it must be, may yet be more than occasional." Professor Osler says: "An important element in many cases is to get the patient's mind quieted, and he can be assured that there is no actual danger. The mental element is oftentimes very strong. In palpitation, before using medicines, it is well to try the effects of hygienic measures. As a rule, moderate exercise may be taken with advantage. Regular hours should be kept, and at least ten hours out of the twenty-four should be spent in the recumbent posture. A tepid bath should be taken in the morning, or, if the patient is weakly and nervous, in the evening, followed by a thorough rubbing. Hot baths and the Turkish bath should be avoided. The dietetics is most important. It is best to prohibit absolutely, alcohol, tea, and coffee. The diet should be light, and the patient should avoid taking large meals. Articles of food known to cause flatulence should not be used. If a smoker, the patient should give up tobacco. Sexual excitement is particularly pernicious, and the patient should be especially warned on this point. For the distressing attacks of palpitation which occur with neurasthenia, particularly in women, a rigid Weir-Mitchell course is the most satisfactory. It is in these cases that we find the most distressing throbbing in the abdomen, which is apt to come on after meals, and is very much aggravated by flatulence. The cases of palpitation due to excesses or errors in diet and dyspepsia are readily remedied by hygienic measures. A course of iron is often useful. Strychnia is particularly valuable, and is perhaps best administered as the tincture of nux vomica, in very large doses; very little good is obtained from the smaller quantities. It should be given freely, twenty minims three times a day. If there is great rapidity of action, aconite may be tried or veratrum viride. There are cases associated with sleeplessness and restlessness which are greatly benefited by bromide of potassium. Digitalis is very rarely indicated, but in obstinate cases it may be tried with the nux vomica."—*Jour. Amer. Med. Assn.*

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

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BOOKS, REPORTS, &c., RECEIVED.

Punjab Administration Report.
Hyderabad Assigned Districts Report.
Yellow Fever Epidemic.
Merchandise and Yellow Fever.
Mortality Statistics of Yellow Fever.
The Cause of Yellow Fever.
Yellow Fever, and Quarantine.
Lt.-Col. A. Adam's Western
Letter, Word and Mind Blinc
K. Lewis).
The Prevention of Malaria (Memoir 1, Liverpool School of Tropical
Medicine).
The Journal of the United Service Institution of India.

COMMUNICATIONS RECEIVED FROM:—

Lt.-Col. E. Lawrie, I.M.S., Hyderabad; Lt.-Col. A. Adams, I.M.S., Jodhpore; Maj. A. Buchanan, I.M.S., Nagpur; Capt. Henvey, I.M.S., Raipur; Dr. H. Sen, Mysore; Capt. R. H. Elliott, I.M.S., The Nilgiris; Capt. W. D. Sutherland, I.M.S., Saugor; Capt. L. Rogers, I.M.S., Calcutta; Major T. P. Maynard, I.M.S., Ranchi; Major C. E. Sunder, I.M.S., Gaya; Lieut.-Col. N. Chatterjee, I.M.S., Raipur; Lt.-Col. J. Maitland, I.M.S., Madras; Major D. B. Spencer, I.M.S., Calcutta; Major J. H. Tull-Walsh, I.M.S., Berhampur; Messrs. I. Howard, Lloyd & Co., Leicester; Capt. C. Duer, I.M.S., Rangoon; Major F. J. Drury, I.M.S., Calcutta; Capt. R. Bird, I.M.S., Calcutta; Capt. C. J. Fernside, I.M.S., Rijahmundi; The Director of Stores, Indi Office; Dr. B. Kaschindamoff, Bombay; Lt.-Col. H. G. W. Wortabet, I.M.S.; Mr. A. Powell, Cachar; Lieut. W. H. Cox, I.M.S., Chaman; The Secretary, International Medical Congress.

Original Articles.

THE PLAGUE EPIDEMIC IN RUSSIA IN 1899.

BY R. KASCHKADAMOFF, M.D.,

Russian Medical Service (on Special Duty, Bombay).

THE plague appeared in a village called Colobowka which belongs to the district of Czaref of the Astrakhan Government, and is situated on the higher bank of the river Achituba, one of the outlets of the Volga. There are about 457 houses in this village with a population of a little over 4,000. The people of this village are pure Russians and obtain their livelihood chiefly by agriculture and sheep farming, a few only work outside. The fields cultivated by these people are at so great a distance from the village that it entails their absence from home for several days together, in consequence of which they are obliged to provide themselves for this period before setting out, leaving the old women and children at home.

Previous to the 16th of July the village was free from epidemic of any kind. On the 16th of the same month a woman, aged about thirty-five, while working in one of the fields, was attacked with fever, cough and spitting of blood. She was taken to the village, but died on the 21st idem. All subsequent attacks, twenty-four in number, were of a similar description, and took place among those relatives and friends who attended her funeral. All these had fever, and many of them suffered from haemoptysis and spitting of blood.

Six days after the death of the first sufferer three doctors arrived at the village. They examined those suffering at the time of their arrival and made all inquiries regarding those who had died, and they came to the conclusion that this disease was very severe and infectious, but could not definitely say whether it was plague or not, whereupon they decided to hold a consultation with the Government doctor who came on the 1st of August. He was accompanied by a Professor of Hygiene of the University of Kazan. Shortly after six other doctors appeared on the scene, two of whom were especially appointed to conduct bacteriological observations. Professor Lewin, the author of the present article and one who had been in India on two previous occasions were sent out by the Plague Commission to make investigations and arrived on the 9th of August. The results of the combined observations were as follows: Of a total of 24 attacks, 23 succumbed, that is to say, the percentage of mortality was 96. Such a high mortality is ascribed to nothing

but the plague. Another very important feature of this disease was its very acute course. Out of 23, six died on the first day, three on the second, nine on the third, three on the fourth, and two on the fifth; all eighteen died in less than three days.

The disease made its appearance with a shivering fit, fever, headache, giddiness and general prostration. In many cases there was vomiting. In some cases there were petechiae on the skin of a dark blue colour. The temperature in all cases was very high, between 103°-104° F. The pulse was very quick from 120—130. This peculiarity of the pulse in connection with the temperature is a common feature of the plague. In most cases the white tongue and peculiar appearance of the face (as of one drunk) were observed. With regard to the internal organs it was observed that the lungs were particularly affected, for all the patients complained of pain in the chest and a cough. The expectoration was copious, watery and mucilaginous with an admixture of blood. By auscultation and percussion no induration of the lungs could be perceived, but a crackling and bubbling sound was present.

The nervous system of each patient suffered severely; each one was very weak, and many before death became unconscious. In spite of the fact that many patients had the pneumonic type of plague—some had buboes as well—the doctors made *post-mortem* examinations upon two bodies, and from the external as well as internal appearances of the bodies and bacteriological examination of many organs they concluded that it was plague. The bacteriological examination was repeated in the well-established laboratory of Astrakhan, with the assistance of the Professors of Chistowitch, Wysokswitch and Levin, and they came to the same conclusion and sent a report to that effect to the Plague Commission on the 17th of September. About the same time a bacteriological examination was held at St. Petersburg by very many of the most celebrated bacteriologists of the time, and the conclusions arrived at by them were the same. It was very important to know how the plague had made its appearance in that place. There are two sources from which it is supposed the plague may have originated, i.e., from Persia, where the disease is endemic through the labourers who visit the country during summer, or from Mongolia through Russian pilgrims who visit it where the plague has been found by a Russian professor, Sobolotroj, to be endemic.

We all know by experience in India that rats and mice take a prominent part in the propagation of plague. In consequence of which it was considered advisable to send a veterinary bacteriologist to investigate this question. He made more than 3,000 *post-mortem* examinations on many species of rodents, but found no traces

of plague (Tartakowsky). This was one of the reasons why the Government were able to combat the disease most effectually within a very short time.

The measures adopted were :—(a) A cordon was placed round the infected locality being in circumference about 100 miles. This cordon consisted of the villagers themselves who were afterwards replaced by the Cossacks. (b) The whole of the village was divided into small sections under the supervision of one of the houseowners of the village whose duty it was to go round his section twice a day to inquire of everybody of his health, and in case of any sickness to make a report to the doctor. (c) When a case of plague was discovered, the patient was removed to a separate building for treatment, the other inmates of the house were put into segregation in another building, while the infected house was closed and the surrounding ground was covered with lime. (d) All the inhabitants of the village were advised to have themselves inoculated after Dr. Haffkine's method without any compulsion. The advantages of inoculation were explained to them, and in order to induce the villagers to do as they were advised, the whole of the staff set the example by being inoculated themselves, whereupon 4,000 of the inhabitants followed their example, leaving about forty, of whom the majority were pregnant women, delicate children and others attacked with fever. The dose for each adult male was 3 cc., female, 2 cc., child above ten years, 1 cc., under ten, 0·1, 0·3, 0·5 cc., according to age.

The disinfection was conducted by an expert chemist, Dzerjgowsky, sent by the Plague Commission. His method was as follows:—The walls of all infected houses were washed, both inside and out, with lime being pumped on to them. The land upon which the house stood, as well as that in its immediate vicinity, was saturated with lime on three different occasions: first, on the removal of inmates, second, before the burning of the house, and third, after the burning of it. All persons, before going into segregation from an infected house, and before leaving the segregation camp, were washed in a 5 per cent. solution of carbolic with soap. All attendants on patients were obliged to wash their hands and feet in a similar solution or in a solution of perchloride of mercury (1:500). For the disinfection of wearing apparel and furniture, formalin was used by the method of Walther and Schlossmann. A solution of 30 per cent. of formalin in 10 per cent. of glycerine, forming glyco-formal, was made and pulverised by Dingner's apparatus. In each house requiring disinfection, one or two apparatus were placed on the floor, every aperture was closed, and the pulverisation of formalin was carried on for three hours. The advantages of disinfec-

tion by formalin are great: (1) it does not ruin property, namely, furs, nor deprive clothes of their colour; (2) it may be used in the disinfection of metal articles; (3) it has a remarkably searching power, for it enters every crevice; (4) it is not so dangerous as perchloride of mercury. The beneficial influence of formalin as a disinfectant was proved by many experiments in Germany and in Russia.

All the houses were classified according to the extent which they were infected.

(1) Those where plague cases were discovered had a separate cordon and were afterwards burned.

(2) All suspected houses were disinfected inside by formalin and outside by lime and a solution of perchloride of mercury. The number of houses in this as well as in the adjoining villages disinfected by formalin was 318, by lime, 160, by perchloride of mercury, 54, and by acid carbolic, 22; total, 554.

The promptitude with which the plague was removed must be accounted for in some way. It may be that the sanitary condition of the locality afforded the means, and that the people kept themselves in an efficient state of cleanliness, and as such were not the case we cannot but conclude that the measures adopted were both prompt and effective.

ENTERIC FEVER IN INDIA.*

By D. B. SPENCER,
MAJOR I.M.S.

1. IN my recent monograph on Fevers of India, I have endeavoured to show that enteric fever, as seen in India, is not always identical, either clinically or etiologically, with the disease of the same name as seen in Europe and other cold or temperate climates.

2. I have appended two tables (page 127) to show at a glance what the chief points of difference are between the two diseases. Table I represents the recognised principal features of true enterica; Table II, those of the disease as often seen in India.

3. These two diseases though closely allied, are, I think, not identical, being due to separate causes with more or less clear-cut separate clinical features, and, I think, we have now a vast amount of evidence, both negative and positive, to show that such is the case. The negative evidence will show that what is called "enteric fever" in India cannot always be attributed to an invasion of the *bacillus typhosus* (Eberth's) associated with sewage contamination of food or drink; the positive evidence, on the other hand, will show that the *bacillus coli*

* Forwarded for publication by the Director-General, I.M.S.—[ED., I.M.G.]

communis is probably not an unimportant factor in the etiology of the disease as often seen in India in which the clinical and pathological characters are different from those of true enterica.

4. Taking the negative evidence first, it may be summarised in the following manner:—

(a) That the bacillus *typhosus* is seldom detected in external nature (water, air, soil); according to Koch and Loesner it is doubtful if it has ever been found outside the human body; in the last Milroy lectures, Dr. Poore says:—"It must be remembered that pure cultivations of the bacillus *typhosus* cannot be said to exist in nature." In the Maidstone epidemic the suspected water was examined by six eminent bacteriologists, but not one of them could find the typhoid bacillus in any sample of water examined, although the chemical analysis made at the same time indicated undoubted pollution. Gibson and Robertson failed to find a single typhoid bacillus in 30 samples of soil collected from infected areas,¹ while recent experimental work in bacteriology in India by an expert bacteriologist tends to confirm this view.² Lastly, the bacillus *typhosus*, as far as is known, has been never yet detected in the air. These facts would at least tend to show that this micro-organism is not easily capable of a saprophytic existence.

(b) That the bacillus *typhosus* has been hitherto seldom detected in the excreta during life or internal organs after death of enteric cases in India in the few cases in which a search has been made.

(c) That the Widal test has not always given a positive reaction in the enteric cases of India (in the cases of British invalids returned to Netley from India).

(d) That the disease is rarely seen among Native troops, and proof is wanting that Natives are absolutely immune to the disease. In fact there is no such thing as absolute immunity in disease.³ Relative immunity may certainly exist, probably does exist, but statistics show that while the disease is exceedingly common among British, it is exceedingly rare among Native troops. To give one instance out of many: in 1896 there were 1,795 admissions and 445 deaths from enteric fever among British troops, strength 70,000, in round numbers: while the corresponding figures for Native troops were 19 and 5, strength being nearly double (128,000); so that the rates were 1 in 39 for British and 1 in 6,737 for Native troops, or in other words the disease was 173 times more frequent, number for number, among British than among Native troops. These figures, I think, point more to an absolute than a relative immunity and require explanation, for the difference in frequency is very striking.

(e) That the clinical features of Indian enterica (Table II), as has been over and over again

pointed out in the Annual Reports of the Sanitary Commissioner with the Government of India, often present a marked contrast to those of true enterica (Table I), and if the two diseases are identical, no satisfactory explanation has yet been forthcoming why there should be such marked differences.

Whether we consider the irregular ulceration of the intestines so often seen at *post-mortems* in India, the almost invariably sporadic nature of the disease—a circumstance so different from what generally happens in other zymotic diseases—the frequent absence of rash, of delirium till perhaps near a fatal end, of abdominal and other symptoms which, whether they appear early or late, must be considered characteristic of true enterica, when we consider all these points not singly and separately but *en masse*, we find in Indian enterica (Table II) a disease in such marked contrast to true enterica that it is difficult to believe that the two diseases have always a common origin, i.e., that they are both due to an invasion of the same bacillus, *viz.*, the bacillus *typhosus*.

(f) That the excreta of patients suffering from enterica are invariably disinfected—soiled linen, bedding, &c., likewise disinfected, boiled or destroyed, and that in this way every effort is made to destroy the bacillus whenever and wherever it is suspected; and if it is true, as has been affirmed by bacteriologists, that the typhoid bacillus is rarely capable of a saprophytic existence, it is difficult to see where the bacillus generally lives and how it gains access to the body.

It has been affirmed by some that the typhoid bacillus can lie dormant in the gall-bladder and intestines of a healthy person quietly waiting for its opportunity, and that when the resisting power of the body to disease is lowered, the bacillus invades the body and produces the clinical phenomena of enteric fever. While this theory is certainly in harmony with the teachings of recent bacteriology, it is difficult to see why the same could not be said of the colon bacillus whose normal habitat is known to be the intestinal tract, and which, like the bacillus *typhosus*, is a pathogenic organism.

(g) That a number of observers whose opinion is entitled to respect have stated their belief that the pathology of Indian enterica is not entirely summed up in Eberth's bacillus.

Among these may be mentioned the names of Sir Joseph Fayrer and of Colonel Crombie, of the Indian Medical Service, men who gained their experience in India. Dr. Joubert, of Calcutta, has likewise observed a form of continued fever which he believes is distinct from enteric fever, lasting exactly 21 days, in which quinine has absolutely no effect, and which, for his

reason, may be assumed not to be of malarial origin:—

"There is very rarely, if ever, delirium, never the formation of sordes on teeth or tongue; no decided abdominal pain; gurgling may be detected if there be looseness of the bowels, a symptom not often present; there are no rose spots nor that great loss of muscular strength and that marked debility so common after even mild attacks of true enteric fever."⁴

Quite recently, in the transactions of the Society of Alumni of Bellevue Hospital, Dr. Brill has mentioned 17 cases of a disease clinically resembling typhoid fever, but in which the Widal reaction was not obtained, nor was the typhoid bacillus found in the faeces of the only three cases out of the 17 in which the search was made.⁵

A number of other observers in India can likewise recall similar instances. In my own experience I have, in the course of nearly 20 years now, seen and recorded a number of cases of continued fever lasting from one to three weeks or more which I was certain were neither typhoid nor malarious but of climatic origin with intestinal intoxication as an important factor.

(h) That enteric fever has not decreased *pari passu* with an improvement in sanitation in India,⁶ although large sums of money are being annually expended for years past by the Government of India; that large waterworks involving heavy outlay have been undertaken and completed within the last 20 years for the supply of pure drinking water for our large cantonments and principal cities in the neighbourhood of cantonments; that a number of dairies, both Government and regimental, have been likewise started of late years for the supply of good milk and butter to the troops, and these are almost invariably under proper European supervision; that in India there is a large medical organisation comprising a number of able medical men who exercise constant supervision in all matters relating to the health of our troops, whether British or Native; that we have sanitary experts appointed to special districts for the investigation of the disease, and if enteric fever in India is always a filth-disease associated with sewage pollution, is it not surprising that, in spite of all this outlay in sanitary improvements and all this medical supervision, it is seldom that a causal connection can be satisfactorily established between the disease and sewage contamination? Is it not possible that the conception of the disease may sometimes be wrong, and that other factors besides sewage pollution may exist to account for the disease?

No one can deny that the sanitation of our Indian villages and small towns is bad, but in considering the etiology of enteric fever in India among troops it is difficult to connect the insanitary condition of these villages or towns

with such perfect sanitation as is usually seen in our cantonments. Brigade-Surgeon Hamilton, R.A.M.C., as far back as 1886 in referring to this subject wrote as follows⁷:

"In no part of the world is sanitation so perfect as in India (meaning cantonments), and in no station could the dry-earth system be more carefully and thoroughly carried out than here (Lucknow), yet year after year with the advent of young soldiers we find the same recurrence of the disease."

This is strong praise for Indian sanitation and the same may safely be said now—after 13 years of steady improvements in sanitation—of most of our cantonments, although defects may exist here and there, though never very striking. Whether we consider the drainage, the water-supply, the arrangements for the disposal of filth and refuse of our cantonments or the food and barrack accommodation of our troops, it will be hard to deny that every thing is, *as a rule*, as satisfactory as it is possible to make it under existing conditions and, although as already stated, trifling defects may exist here and there, they would not, I think, be considered sufficient by any impartial observer to account wholly for a disease which is admittedly a filth disease.

It has been freely and repeatedly asserted by many that our troops visit bazars, towns and villages where filth conditions prevail and there get the infection. That this is possible cannot be denied, but some proof must be necessary before such a contention could be admitted to hold good in all cases of enteric fever. The fact must be remembered that a number of young British officers contract the disease year after year in India, and in their case at least the suspicion of the disease having been contracted from bazars or villages by frequenting those places must be set aside. If, however, infection from bazars or villages be the sole cause of the disease, it is somewhat surprising that such a simple expedient as placing those places out of bounds—as is done in cholera or small-pox epidemics—is not more frequently resorted to and the results noted.

5. Taking the positive evidence now (in support of the contention that the bacillus coli is the probable cause of the disease in many cases) it may be summarised in the following manner:—

(a) That this organism is one of considerable importance both in its relations with the typhoid bacillus and various other pathological processes.

(b) That, as its name implies, it is a constant inhabitant of the intestinal tract in man and other animals, and is one of the most widely distributed organisms in external nature (air, water, soil), being found even in the purest drinking water.

(c) That, in its morphological, cultural and pathogenic characters, this organism is closely allied to the typhoid bacillus, so much so that

some expert bacteriologists like Rodet and Roux have come to the conclusion that this organism (*bacillus coli*) when grown in sewage or other putrefying organic matter might assume a pathogenic character and give rise to a disease which is clinically indistinguishable from true enterica.

(d) That the experimental work of Sanarelli and others has undoubtedly established what is known in bacteriology as a symbiosis of these two species, the *B. typhi* and the *B. coli*. In this connection the following remarks by Dr. Houston in a case of cystitis caused by the typhoid bacillus which came lately under his notice are worthy of mention⁸:

"Typhoid fever is not solely due to the bacillus of Eberth, but other etiological factors must be brought to bear on the patient before the clinical features of typhoid septicæmia result. The researches of Sanarelli, which show how the virulence of the typhoid bacillus is increased by the injections of the toxin of the *bacillus coli communis*, and also those of Sidney Martin, which confirm his results, make it certain that the *bacillus coli* may be directly concerned in producing a virulent typhoid infection in animals. In the report on the Belfast water-supply Dr. Lorrain Smith has shown that the *bacillus coli* had a distinct relation to the etiology of the recent epidemic of typhoid fever in Belfast, and that many of the cases gave evidence of a mixed infection of the bacillus of Eberth and that of Escherich."

Dr. Burney Yeo says:—

"It is known that in cases of typhoid fever the *bacillus coli* increases greatly in number in the intestine and also becomes more virulent."

In another place he says:—

"It seems certain now that in many cases the augmented activity and virulence of the *bacillus coli* may play a *more important* part in poisoning the organism than the typhoid bacillus."

(e) That, likewise, on looking over the Annual Reports of the Sanitary Commissioner with the Government of India, it will be seen that frequent references have been made to the *bacillus coli* as being a probable factor in the etiology of enteric fever in India. In the report for 1892, an exhaustive reference has been made to the experimental researches of Sanarelli, Chantemesse and Widal throwing light on the same question.

(f) That in these Annual Sanitary Reports reference has likewise been frequently made to the influence of climate and season, of chills and exposure to heat, of youth and fatigue, in fevers of a continued type in India, but in which the *post-mortem* appearances and clinical features were against the diagnosis of enteric fever.

One medical officer (R. A. M. C.) has thus described his views of the etiology of the disease⁹:

"As to the cause of the enteric fever, it is as obscure as ever. From what I have seen in India I am induced to think that a fever of a prolonged nature having as its pathognomonic sign ulceration of the small intestines can be caused without a specific excitant; in fact, that

youth, indiscretion, indigestible food, undue exposure to heat and fatigue are factors enough in themselves to produce a fever the nature of which is such that over 25 per cent. of those attacked die. Eliminate the five causes mentioned above, and I am inclined to think that with them would go nearly all the cases of the disease we call enteric fever."

These views are not in line with the generally accepted doctrine of the etiology of enteric fever in India, and many would pronounce them as rank heresy, but it is not difficult to see, I think, that his observations were correct, and that the cases he had before his mind's eye when describing them as above were cases of Indian enterica (Table II), in which the clinical and pathological characters of the disease were different from those of true enterica (Table I).

The following passage from the Annual Report of the Sanitary Commissioner, Government of India, for the year 1891, in connection with this subject is, I think, highly significant and worthy of a careful study¹⁰:

"Meanwhile it should be borne in mind that the finding of the enteric bacillus in a few cases of Indian fever although it proves that the same enteric fever occurs in India as in Europe, does not prove that all Indian continued or remittent fevers are of the same kind. Indeed the anomalous, clinical and pathological character of many Indian cases of fever raises the suspicion that much remains still to be done in the way of differentiation. As happened in the case of typhus and typhoid in Europe, a time may come when men will wonder how certain Indian fevers ever came to be confused one with another and lumped together."

(g) That the *bacillus coli* is one of the most important organisms connected with the etiology of what is known as food-infection and ptomaine-poisoning resulting therefrom in which the clinical features are often those of true enterica.

This is the most direct and most important evidence we have—to show the close connection there exists between ptomaine-poisoning and a fever with enteric symptoms.

According to Mann the symptoms of ptomaine-poisoning may be divided into two classes¹¹:

- (a) Those due to a true systematic infection;
- (b) Those due to simple poisoning.

Cases of the former group (a) run the usual course of an infectious disease often simulating typhoid fever.¹²

That alkaloidal poisons (ptomaines) are actually formed in and absorbed from the intestinal tract has been already amply proved by Brieger, Bouchard and others. Further, that these alkaloids are present in the circulating blood is shown by the fact that they are separated from it by the kidneys and are found in the urine.¹³

What is more important still, I think, is the fact that an alkaloid has been isolated by Brieger from human cadavers which he terms mydalein, and which has a marked physiological action of

great clinical interest in that it produces among other symptoms the phenomena of fever.¹⁴

In illustration of this point showing the close connection between ptomaine-poisoning and a fever with enteric symptoms as of cause and effect, I may give the particulars of the following cases which came under my notice some time ago:—

Mr. E., a strong man of somewhat plethoric habits, aged 40, with a good previous history, was more or less suddenly taken ill with a sharp attack of fever on the morning of the 29th May 1894. For two days before the attack he was feeling a bit "out of sorts," but had no fever; had indulged in a fairly good meal of *prawn* curry and rice the evening previous to the attack. The fever varied from a 102° Fahr. to a 104° Fahr. for the first four days with severe constitutional disturbance and gastric irritability. No diarrhoea. On the fifth day the typhoid state was distinct—there was marked delirium, and the heart's action began to fail; pulse very frequent and small. Death took place on the sixth day with a temperature of 105° and cardial failure—in spite of all treatment from the commencement of the illness by a duly qualified medical man, who attributed the illness to the curry, though it is noteworthy that the three other members of the same family who partook of the same curry were not affected in any way.

Two years ago, while I was at Goona in Central India, I had a somewhat unpleasant experience in my own person of a similar fever arising from a simple chill. I was out one evening in the cold weather for a bicycle ride being perfectly well at the time. On returning home that same evening I felt as if I had contracted a chill during the ride. After a light dinner I went to bed earlier than usual and noted that my temperature was 99.6° with a little general aching all over the body. The next morning the temperature was 101.2°, and the pains were worse; bowels constipated; tongue slightly coated. A saline purge, phenacetin and ordinary diaphoretic mixture were tried with rest in bed and low diet. The fever, however, steadily asserted itself—it rose higher and higher, reaching a 105° on the evening of the fifth day. There were no complications of any kind, there was no eruption, and I was certain there was nothing to account for the fever but the chill. My condition, however, was getting rapidly serious, and I was removed to a friend's house in a *doolie* that same evening. At 8 p.m. (fifth day) the temperature was still 105°, and the heart's action was rapidly failing; pulse 120, very small, occasionally intermittent. At about 9 p.m. the same night a copious enema of water with some Condy's fluid in it was administered and retained for about 10 minutes followed by a foul-smelling motion with scybala, and almost immediately after the temperature commenced falling.

From a 105° it went down to a 102° within half an hour after the enema had worked; it fell steadily during the night, was normal the next morning, and never rose again, recovery being uninterrupted though prolonged over three weeks owing to marked debility. Not a single grain of quinine was used during this illness. This was an undoubted case of acute "intestinal sewage-poisoning," to use Lauder Brunton's expression and was brought on by a chill followed by bacterial infection of intestinal contents, and ptomaine-poisoning following thereon.

These cases show—and I think *too much stress cannot be laid on this point*—that ptomaine-poisoning and fever may occur not only from the ingestion of bacterially-infected food, but even when the food is good, provided that a certain exciting cause such as a chill is present. It is not necessary, in fact, that a person should

eat putrid meat or fish to induce the phenomena of ptomaine-poisoning, but that the same putrefaction of food may occur within the body and induce the same phenomena, although the food at the time of ingestion may have been perfectly good, provided a certain exciting cause be present to set up the process.

A great many instances of food-infection, particularly of meat and milk, have been shown to be due to the presence of saprophytic germs, this happening even when the articles of food have been obtained from healthy stock and kept free from specific pathogenic bacteria.¹⁵

(h) That such acute and even fatal infection sometimes takes place from the intestinal tract has been observed by many writers.

Ross drew attention to the influence of intestinal intoxication in Indian fevers in 1892.¹⁶ About the same time, working independently of him, I made the following remarks in an article published on the Diagnosis and Treatment of Enteric Fever,¹⁷ which, I think, will even now bear repetition:—

"In all cases of fever there is a rapid accumulation of ptomaines and other toxic products in the intestinal canal as the result of increased tissue—metamorphosis and diminished peri-stalsis, the absorption of which into the general circulation will naturally tend to keep up the fever. The fever in fact will feed itself, or in other words there is, I think, in all fevers as much danger from poisoning from within (entero-sepsis) as of poisoning from without."

6. The evidence, both negative and positive is now concluded. There are two important questions which may now be considered—(a) Under what circumstances the bacillus coli, ordinarily a harmless organism, can at times become actively pathogenic and produce fever? (b) What is the cause of the apparent immunity of Native troops to the disease as compared to British troops?

With reference to the first question, the teachings of recent bacteriology are very important. We now know that there is a large number of pathogenic organisms which even in health we carry about our persons, and that these are harmless so long as the body-resistance is normal. Major W. J. Buchanan's (I.M.S.) paper on "Terminal Dysentery" in the tropics supervening in the last stages of chronic diseases in India throws a very useful light on the subject.¹⁸

The observations of Sir Douglas Powell in his address on medicine before the last Annual Meeting of the British Medical Association are likewise highly suggestive. According to him, we carry about with us in our accessible mucous tracts, especially the naso-oral and respiratory passages, a number of germs specific to many diseases, but which do not invade the body until they find a suitable environment with lowered resistance of the body.

The same may be said of the *B. coli*, whose normal habitat is the intestinal tract. As long

as a person is in health, as long as the temperature of the body and body-resistance are normal, so long it is powerless for evil; but the moment a person's temperature rises, and this may occur in a tropical country from a trifling cause, such as a chill or exposure to heat or fatigue or perhaps some gastric or hepatic passing derangement, the result of an error in diet—I repeat—that the moment the temperature rises, the physiological equilibrium becomes altered—the normal resisting power is diminished—the digestive juices, *viz.*, gastric, pancreatic, intestinal, bile, become defective in quality or quantity or both, and the result is—that—that same harmless organism engaged perhaps in a constant struggle for mastery in the body finding itself in an abnormal environment suitable for its growth and propagation now becomes aggressive and actively pathogenic, while the presence of food in the intestinal tract and of faecal matter with heat and moisture forms a nidus there for that bacterial metabolism with the formation of ptomaines and other toxic products, the absorption of which, as we have already seen, may give rise to the most serious consequences. To put the whole matter into a nut-shell, the contents of the intestinal canal in health are not suitable for a bacillary invasion—in disease (as opposed to health) they are suitable for such invasion.

The second question is—Why are the Natives of India apparently immune to enterica?

In this connection, I think, the chemistry of ptomaines furnishes an important light. We

know that these ptomaines are alkaloidal substances of the aromatic series of organic compounds, and that they are formed in the process of putrefaction of proteids or albuminoids derived from nitrogenous animal food, such as meat of any kind. We know also that meat is a regular article of diet for the British soldier, while in the Native army a large number (Hindoos) never touch meat, fish or eggs. Broadly speaking, the food of the British soldier consists largely of animal diet, that of the Native soldier of vegetable diet (atta, rice, dal) and ghee, a carbo-hydrate. Again, beer is a common drink with British troops, and a British soldier can drink as much canteen beer as he likes. In the Native army beer is unknown. Now beer is a thing which is very apt to ferment, especially in the hot weather, and beer is drunk by British soldiers, both hot weather and cold, without any restriction.

We have thus, I think, in meat and beer those elements of putrefaction and fermentation which are essential for ptomaine-formation. The fact that enterica is so much more common in the hot weather than in the cold, *i.e.*, at a time when bacterial activity is greatest in the processes of decay lends additional colour to this theory, and much of this striking difference in the rates of incidence of the disease between European and Native troops is, I believe, due to a difference in diet of the two races.

7. To conclude, then, with these facts before us, both as regards negative and positive evi-

Table I.—True Enterica.

| Etiology. | Widal test. | Mode of incidence. | Mortality per cent. | Chart. | Mode of onset | Rash. | Typhoid state. | Abdominal symptoms. | Post-mortem appearances. | Duration of fever. | Treatment. |
|--|--|------------------------------|---|--|---------------|--|-----------------------|---|--|--------------------|---|
| Bacillus typhi (Eberth's) associated with sewage contamination of food or drink. | Positive reaction with the bacillus typhi. | Usually in an epidemic form. | 7·14 in the last Maidstone epidemic (Poole's report). | Often typical. 1st week gradual rise. 2nd week high continued fever. 3rd week gradual defervescence. | Gradual | Generally present. 88 % in the last Maidstone epidemic (Poole's report). | Early and pronounced. | Whether early or late, they are unmistakable. | Typical ulceration of glandular structures of small intestine. | Generally 3 weeks. | The recognised treatment has been an expectant treatment with intestinal antiseptics and irrigation (Burney Yeo). |

Table II.—Indian Enterica (a fever with enteric symptoms.)

| Etiology. | Widal test. | Mode of incidence. | Mortality. | Chart. | Mode of onset. | Rash. | Typhoid state. | Abdominal symptoms. | Post-mortem appearances. | Duration of fever. | Treatment. |
|--|-------------|-----------------------------|----------------------|----------------------|--------------------|-------------------|-----------------------------------|---------------------|--|---|--|
| Probably the bacillus coli associated with fermentation and putrefaction of intestinal contents and consequent auto-infection. | Not known. | Usually in a sporadic form. | About 25 % in India. | Generally irregular. | Sudden or gradual. | Generally absent. | Often vague or altogether absent. | Often absent. | Often the ulceration of intestines is irregular and extensive, being not confined to glandular structures. | 3-4 weeks, but it can be aborted by a specific treatment. | The treatment I adopt is an eliminative treatment combined with intestinal antiseptics and irrigation. |

dence, it is, I think, difficult to believe that defective sanitation in India is the sole cause, and the whole cause of enteric fever as seen in India for, while on the one hand we can in India but seldom prove a causal connection between the disease and sewage contamination of food or drink, there is, I think, on the other hand, a vast array of positive evidence to show that a *fever with enteric symptoms* closely simulating true enterica (Tables I and II) has been and can be caused by other factors—factors which I believe are as yet not sufficiently recognised, although spasmodic efforts have been made from time to time by a minority of original thinkers to show that they do exist, and it may reasonably be asked whether, with our advancing knowledge of the subject, the time has not come for medical men in India, whatever may be their past or present convictions, to consider both individually and collectively the various points enumerated above and to decide whether the disease we call "enteric fever" in India is always one disease arising from one cause only or a complex disease presenting several phases and arising from a variety of causes, chief among which may be mentioned climate, food, and intestinal intoxication from fermentation and putrefaction of intestinal contents and the consequent formation of ptomaines and toxins therein of bacterial origin though quite independently of the typhoid bacillus, for it must be obvious that, without correct premises, without a correct conception of the disease, and without an absolute unanimity among medical men as to what constitutes a correct conception of the disease, the inferences must be wrong, and that there never can be any satisfactory solution of a complex and difficult subject like the enteric question.

¹ Poore's Milroy Lectures, *British Medical Journal*, February, 1899.

² Major Davies' Report published in Annual Report of the Sanitary Commissioner, Government of India, for 1897.

³ Dr. Couin's presidential address at Portsmouth at the Annual Meeting of the British Medical Association.

⁴ Davidson's Hygiene and Diseases of Warm Climates.

⁵ *British Medical Journal*, May 6th, 1899.

⁶ The same might be said in Europe.—ED., *I. M. G.*

⁷ Annual Report, Sanitary Commissioner, Government of India, 1886.

⁸ Houston's Report, *British Medical Journal*, January 14th, 1899.

⁹ Annual Report, Sanitary Commissioner, Government of India, 1892. Extracts from Reports of Medical Officers (Dr. Boileau).

¹⁰ Annual Report, Sanitary Commissioner, Government of India, 1891.

¹¹ Ander's Medicine, 1898.

¹² *Ibid.*

¹³ Brunton's Disorders of Digestion, 1893.

¹⁴ *Ibid.*

¹⁵ Ander's Medicine, 1898.

¹⁶ Ross's Entero-septic Fevers, *Indian Medical Gazette*, 1892.

¹⁷ Spencer's article, Diagnosis and Treatment, Enteric Fever, *Indian Medical Gazette*, December, 1892.

¹⁸ Dr. W. J. Buchanan's paper on Terminal Dysentery, Annual Meeting, British Medical Association, 1899.

HINTS FOR THE INQUIRY INTO THE PREVALENCE OF THE ANCHY-LOSTOMA IN INDIA.

BY L. ROGERS, M.D., F.R.C.S.,
CAPTAIN, I.M.S.

AT the request of the Editor, *Indian Medical Gazette*, I have drawn up the following hints for the working of the scheme of a collective inquiry into the prevalence and harmfulness of the intestinal parasite known as the ancylostoma duodenale in the various districts of India and Burma.

Our present knowledge is limited and is mainly due to the labours of Giles and Dobson, the wide divergence of whose views shows how much we have still to learn about it. As there may be some observers who have not paid sufficient attention to the subject to allow of their answering some of the questions without further study, these brief suggestions as to the best means of simply investigating the subject are here given.

It is particularly in cases of malarial anaemia in which the ancylostoma may be found that it is very difficult to decide if the latter is a definite and important contributing factor in the production of the anaemia or only an accidental feature.

An examination of the blood will often allow of a correct inference being drawn and an important guide to correct treatment being obtained. The percentage of haemoglobin should be estimated, and the number of red and white corpuscles per cubic millimetre ascertained, these estimations being made at the same time in healthy people, as a control, for the standard, more particularly of the haemoglobin, in natives of many parts of India is much lower than the European standard, a point which is worthy of more study than it has yet received in this country. The characteristic features of the type of the anaemia in pure ancylostomiasis are, firstly, that the haemoglobin is reduced to a much greater degree than the number of the red corpuscles, so that the amount of haemoglobin in each corpuscle falls much below the normal, being always, in my experience, less than 0.5 of the normal; secondly, the white corpuscles though absolutely reduced in numbers are relatively to the red, slightly increased, being 1 to 300 or 400. In the anaemia of chronic malaria, on the other hand, the haemoglobin and number of the red corpuscles are much more equally reduced, the haemoglobin value being always over 0.5, while the number of the white corpuscles (in the absence of leucocytosis during fever) are considerably reduced relatively to the red, the proportion being about 1 to 1,000 or even 1 to 2,000. The specific gravity is also more reduced, relatively to the

degree of anaemia, in ancylostomiasis, than in malarial anaemia. In cases where the anaemia is produced by the combined action of both malaria and ancylostomiasis, the type of the anaemia will be intermediate between those of the two primary diseases.

The following hints on methods of investigation may be found useful:

1. The examination of the faeces for the ova of the worm. A good way of doing this is to dilute a small piece of the motion with a drop of (1 in 20) carbolic acid, which removes all smell. If no ova of the parasite are found by a systematic search with the microscope ($\frac{1}{4}$ inch), it may be taken as pretty certain that there are less than twenty of the worms present, if any, and thymol is not indicated even if anaemia is present. The only common ovum, which from its thin capsule, clear unstained contents and oval outline, is liable to be mistaken for the ancylostoma is the oxyuris, but the young worm can be seen to be curled up inside them, which is never the case in the ancylostoma. The numbers found will afford a rough indication of the number of worms present in the intestine.

2. Counting the worms passed after the administration of thymol. In order to obtain accurate information as to the number of worms in healthy and diseased persons a 20 to 30 grain dose of thymol should be given, and repeated at the end of three hours; all the motions passed for the next twenty-four hours being kept for examination. A piece of muslin should now be fastened over the top of a kerosene tin, so that it sags down slightly, the motion should be placed on this and water poured slowly on it, while it is being stirred up until all the colour has been removed and only husks of grain and other solid material remains. This should now be placed in a shallow flat dish of tin with a layer of water. On slightly stirring up the detritus with a piece of wood, the white glistening ancylostomata worms can easily be picked out, the smaller ones with finely branched tails being the males. Thymol should never be given to advanced cases of malarial cachexia or dysentery for diagnostic purposes, but only when the ova have been found to be numerous in the faeces by microscopical examination, then the drug must be used with caution, as this drastic form of treatment may be very dangerous in such cases.

PARASITES FOUND ON MOSQUITOS.

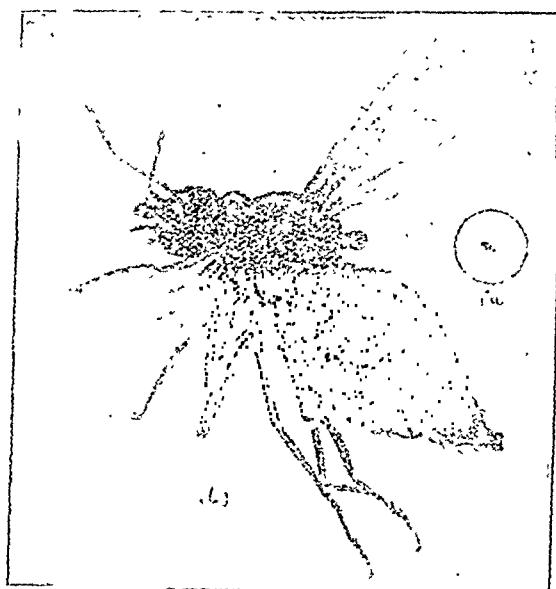
By C. J. FEARNSIDE, M.B., C.M.,

CAPTAIN, I.M.S.,

Superintendent, Central Jail, Rajahmundry.

EVERY one who lives in the tropics has experienced both the buzz and the bite of the

mosquito. On the other hand, all may at the same time console themselves that she, too, is troubled by other insects which perhaps do not buzz but certainly bite and go on biting. The proverbial saying that "Big fleas have little fleas, &c.," is well exemplified in the case of the mosquito. The two parasites to which I refer are (a) a mite or tick, and (2) a dipterous fly. These have been detected feeding on *Culex* III and IV of those collected in Rajahmundry, and so far as my experience goes, I have not yet



I.
Dipterous fly parasitic on Blood-fed culicidæ.
(a) Natural size. (b) Magnified.



II.
Mite or Tick parasitic on Blood-fed culicidæ.
(a) Natural size. (b) Magnified.

observed them amongst the *Anopheles* family. It is now known that malarial zygoblasts circulate in the blood of the mosquito; it must therefore follow that many of these germs find

their way into the bodies of these two parasites. How far they help in the spread of malaria would make an admirable thesis.

MITE OR TICK PARASITE ON BLOOD-FED CULICIDÆ.

Scattered over the body of *culex pipiens*, if it has been previously fed on blood, human or avian, may be noticed on the fifth or sixth day a number of small vermillion coloured points, which, if detached and placed under the low power of a microscope, will be found to be small insects. They are oval or round, and of a red, pale-red or vermillion colour. Those found on the thorax of the mosquito are of a grey colour. It is most probable that the mandibles of those attached to the abdomen, penetrating between the somites, reach as far as the stomach, whence they draw their nourishment direct. The red colour is due to the colouring matter of the haemoglobin which is decomposing in the mosquito's stomach. The blood of the mosquito is watery and clear, hence those attached to the thorax are of a pale colour. They have six legs which are made up of five segments, the terminal ones being furnished with hooks so as to fix themselves on the body of the host. The skin is transparent and covered with black or brown chitinous spots. Several long hairs are scattered over the body for tactile purposes. The body contents are made up of a clear fluid in which float large numbers of red or grey (oily?) globules varying in size from 1" or 2" to 7".

Measurements of Mites.

| | | |
|-----------------------|-----|----------|
| Breadth | ... | .49 mm. |
| Length | ... | .46 mm. |
| Legs | ... | .23 mm. |
| Protractile mandibles | ... | .072 mm. |

DIPTEROUS FLY PARASITIC ON CULICIDÆ.

If blood-fed mosquitos (*i.e.*, *culex*) are collected from the dark corners of rooms, godowns, &c., one occasionally meets with a small fly fixed to the undersurface of the abdomen of the host. It measures from 1.8 mm. to 2 mm. and is of a grey colour and scarcely to be distinguished from the mosquito. When viewed with a pocket lens the head is black, thorax brown (the centre being of lighter colour), and the abdomen is grey. When it has fed, there is an oval brown mass in the centre which is decomposed blood extracted from the mosquito's stomach.

The following are the measurements:

| | |
|---------|---------------------------------------|
| Head | .23 mm. \times .32 mm. |
| Thorax | .5 mm. \times .2 mm. |
| Abdomen | 1.15 mm. |
| Antennæ | .46 mm. = Two in number, 12 segments. |
| Palpi | .14 mm. |
| Wings | .92 mm. \times .48 mm." |
| Legs | 1.5 mm. |

The abdomen, of a grey colour, is pointed at the extremity and composed of eight somites.

The wings are membranous and covered with minute chitinous nodules. There are two spots comparatively large on the outer nervure of which there are three, each bifurcating at the distal end. The labium is thick and short, .14 mm. \times .05 mm. and is protractile. The antennæ are covered with small hairs at the joints. The legs measure about 1.5 mm. and are made up of eight segments. They are of a brown colour and covered with hairs.

At some future date I hope to describe the parasites affecting the stomach of the mosquito, and I am afraid that one will have to come to the conclusion that the mosquitos' lot (like the policeman's) "is not a happy one."

I am indebted to my jailor, Mr. Mitchell, for the water-colour plates of these parasites.

UPON A TYPE OF ACUTE LOBAR PNEUMONIA ENCOUNTERED IN THE TOCHI VALLEY AMONGST NATIVE TROOPS AND FOLLOWERS.

BY N. P. O'GORMAN LALOR, M.B., B.CH., CAPT., I.M.S.

The Disease, its Bacteriology and Etiology.

THERE prevails in parts of India, and especially upon the North-West Frontier during the cold season, a type of acute lobar pneumonia, which differs in certain important points, from the type of that disease usually met with in the countries of Europe.

I have selected the type I have encountered in the Tochi Valley as the subject of this commentary. It is possible that the etiology, and probable that the symptoms, physical signs, and clinical phenomena of the Tochi type, are identical with those of the general type of the disease met with in other parts of the North-West Frontier.

Chronic* malarial infection of the subject has largely contributed to the severity of the type of acute lobar pneumonia which I have encountered in the Tochi, and with which I now proceed to deal.

Commencing in October, and increasing during November and December, this type of pneumonia attains its greatest prevalence, and its greatest severity during the months of January, February and March, decreasing again during the months of April, May and June; I have not seen any cases during the months of July, August and September.

The mortality amongst cases occurring during the first quarter of the year is high. This will

* Exacerbations of the chronic infection, in the form of paroxysms of malarial intermittent fever, have a connection with the development of this type of pneumonia. In this case cause and effect are difficult to distinguish.

APRIL 1900.]

PNEUMONIA IN TOCHI VALLEY.

appear from the following statistics extracted from the regimental returns of regiments which have served in the Tochi.

| Regiment. | Period covered by the returns. | Strength (average for the period) | Number of cases. | Number of deaths. | Percentage mortality, calculated upon the number of cases. |
|--|-----------------------------------|-----------------------------------|------------------|-------------------|--|
| 1st Sikhs . . . | 16th January to 31st January 1898 | 614 | 2 | 2 | 100 |
| 20th Madras Infantry | 3rd February to 4th October 1898 | 748 | 13 | 2 | 15 |
| 1st Punjab Cavalry (half regiment) | 15th January to 2nd December 1898 | 192 | 8 | 4 | 50 |
| 14th Sikhs . . . | 16th January to 1st April 1898 | 708 | 13 | 8 | 61 |
| 1st Punjab Infantry. | 16th January to 22nd April 1898 | ... | 12 | 6 | 50 |
| No. 6 Bombay Mountain Battery (Native) | 16th January to 6th May 1898 | 161 | 12 | 5 | 41 |
| 8th Rajputs . . . | 1st January to 1st March 1899 | ... | 8 | 2 | 25 |

During the first quarter of the year the disease is contagious in varying degree.

I have myself seen sepoys fall ill with the disease whilst nursing sick comrades who were suffering from it. So well recognised indeed is the occurrence of contagion under these circumstances that the sick attendants of pneumonia patients in the Tochi are changed, as a rule, every twenty-four hours.

This disease in the Tochi Valley has at times attained so great a prevalence amongst Native troops and followers during the cold weather, as to resemble an epidemic.

It is constantly in evidence every year, so sure as the cold weather approaches, and has always more or less the same characteristics, though it varies, both as regards the extent of its prevalence, and the degree of its severity. I have seen a patient struck down by the disease, and die within 48 hours of the onset of the symptoms, and I believe that other officers of the Indian Medical Service have had experience of cases which have succumbed even more rapidly.

A peculiarity of the disease is this, that it is in its initium often associated with acute general bronchitis, though the bronchitic signs as a rule subside during the course of the disease, gradually yielding precedence to those of acute lobar pneumonia proper. This peculiarity has two extremes, which one sometimes sees, one that the disease begins as an acute general bronchitis without the presence at the beginning of any demonstrable physical signs of the pneumonia, which appears subsequently; the other that physical signs of the bronchitis, present at the beginning of the disease along with the physical signs of acute lobar pneumonia proper, rapidly and completely disappear, and are gone in 48 hours from the commencement of the illness.

It naturally occurs to one, that an acute specific disease of this type, which shews itself at times in an epidemic form, must own a specific pathogenic germ as the source of its existence, and the cause of its spread.

We know, since the publication of the researches of Sternberg, Frankel, Weichsellbaum, Wolf, Netter, Gameleia, and subsequent investigators, that a decided majority of all cases of acute lobar pneumonia are probably due to the invasion of the lung by the "Diplococcus Pneumoniae of Frankel," or as it is now more commonly called, the "Micrococcus Pneumoniae Crouposæ."

By the 15th of December of 1898 at the Military post of Miranshah, about half way up the Tochi Valley, where I was then stationed, I had examined eleven cases of the type of pneumonia there encountered, and taken careful notes with regard to each

In each of these eleven cases I had found the "Micrococcus Pneumoniae Crouposæ" present in cover-glass specimens of the sputum, stained by Gram's method. In one of those cases I had found a similar germ of identical appearance present in chicken broth cultivations made from specimens of the urinary and alimentary excreta respectively.

I now endeavoured to trace this germ, if possible, to its source. My first idea was, that a disease having its *locus resistentiae* in the lung, and accompanied by the presence in the sputum of a specific germ might be due to inhalation of air containing that germ.

The presence of the germ in air might be accounted for by presuming its existence upon the surface of the ground, whence it might be swept up by prevailing winds.

Now the ground surface around military posts in the Tochi Valley (and Miranshah is no exception) is dry and dusty during the cold season, and indeed during the greater part of the year; further, winds prevail from time to time in the valley, and often blow so briskly as to raise up storms of dust, which last at times for a day or more.

Cases of pneumonia occur in the Tochi during nine months of the year, and since it seemed unlikely that the specific germ, whatever its nature might be, could survive constant exposure to the rays of the Indian sun for long, it was natural to suspect the existence of some special source from which the specific germ was renewed; from which the soil, according to my view would be constantly reinfected as it were.

Now troops in the Tochi, inasmuch as they garrison a country where every precaution against sudden attack or surprise has to be taken, are more overcrowded within the various outposts, than they would be were they further south in Cantonments; this is a necessary evil.

A feature of this overcrowding is, that a number of transport animals, and cavalry horses,

have to be picketed within each post, for nineteen hours out of every 24. These animals are also necessarily somewhat overcrowded, and the lines in which they are picketed are close to the tents and huts occupied by the men; the degree of proximity varies of course. It will be agreed that, from a sanitary point of view, such comparative overcrowding of men and animals, however unavoidable, is unsound upon general principles.

In the case of the disease under review, I shall try to shew that this kind of overcrowding assumes a special importance.

Returning to the theory of reinfection of the soil, I could think of nothing likely to act in such a way, but the urinary and alimentary excreta of the horses, mules, camels, and cows picketed or tethered, at times within, and at times without, the post.

It was a matter of common knowledge that these were few places in the immediate neighbourhood of the post, which were not constantly exposed to contamination by the excreta of all these animals. To be sure, all litter which was found about was regularly cleared away, thrown on a large dung heap some distance from the post, and subsequently burnt. Nevertheless a certain proportion was bound to remain mixed up with the surface layers of the soil here and there, and it seemed to me that this contamination of the soil by animal excreta might be in fact a contamination by the "Micrococcus Pneumoniae Crouposae," with perhaps other germs as well.

To test these presumptions, I commenced on December the 15th of last year, a series of bacteriological examinations of the soil, choosing on the one hand specimens of soil which I knew to be contaminated by animal excreta, and on the other, specimens which, as far as I could tell, were not so contaminated.

To enter into detail with regard to these examinations would be beyond the compass of the present article. Suffice it to state that, out of ten cultivations of specimens of soil known to have been contaminated by animal excreta, nine contained a germ identical in appearance with "Micrococcus Pneumoniae Crouposae," whilst out of six cultivations of specimens of soil presumed uncontaminated by animal excreta, but two contained a germ identical in appearance with "Micrococcus Pneumoniae Crouposae," and one of these was strongly suspected of contamination by the expectoration of sepoy.

In the examination of all these cultivations cover-glass specimens were taken, stained by Gram's method after careful fixation, and then examined under a Leitz 1/12 oil immersion objective, with a magnifying power of 800—1,000 diameters. I should state here that all my subsequent preparations were stained and examined in the same way.

Concurrently with the above work, I took notes with regard to the prevalence of dust

storms, in relation to the occurrence amongst fighting men, and followers of cases of acute lobar pneumonia. I subjoin the results of this comparison in tabular form:—

| Dates of occurrence of dust storms. | Quarter from which wind blew. | Cases of acute lobar pneumonia with dates of invasion. | Quarter from which cases came. | REMARKS. |
|--|-------------------------------|---|---|---|
| 18th, 19th, and 20th of December 1898. | South . | (19th December 1898, 20th December 1898. (Both, sepoy.) | North side of Transport (mule) lines. | Note the exposure to inhalation of dust blown up from the ground in the Transport (mule) lines, by this storm from the South. |
| 23rd of December 1898. | West ... | (23rd December 1898, 1 sepoy, 25th December 1898, 1 sepoy, 28th December 1898, 2 sepoy and Hospital cook, | North side of Transport lines. West side of Post. South side of Post. | No cases from the East side, the most protected from this wind. |

NOTE.—Rain began on the night of the 28th of December 1898.

| Dates of occurrence of dust storms. | Quarter from which wind blew. | Cases of acute lobar pneumonia with dates of invasion. | Quarter from which cases came. | REMARKS. |
|-------------------------------------|-------------------------------|--|--------------------------------|--|
| | | 29th December 1898, 1 sepoy. | North side of Post. | This case was probably in the same category as the previous six but is not included. |

NOTE.—From 2nd to 10th of January 1899, there was severe early morning frost.

| | | | | |
|---|----------|--------------------------------|--------------------------------|---|
| .... | ..... | 12th January 1899, 1 muleteer. | Transp or t lines(mule lines). | |
| 12th, 13th, and 14th of January (severe). | West ... | None .. | ..... | Absence of cases of acute lobar pneumonia after this dust storm, a accounted for by the presumption that the eight days' severe morning frost which immediately preceded it had killed germs residing in the superficial layers of the soil, and "Micrococcus Pneumoniae Crouposae" amongst the rest. |

NOTE.—From the 13th of January 1899 onwards the weather was mild, and comparatively warm at nights.

| Dates of occurrence of dust storms. | Quarter from which wind blew. | Cases of acute lobar pneumonia with dates of invasion. | Quarter from which cases came. | REMARKS. |
|-------------------------------------|-------------------------------|---|---|---|
| 21st January 1899, (mild). | South ... | 2 3rd Jan. 1899, 2 sepoys. 24th January 1899, 1 sepoy. | From the Southern aspect of the post; they all lived in tents close to the entrancements on the south side. | The tents occupied by these men were especially exposed to this dust-storm. |

REMARKS.—The above series of 13 cases of the disease were consecutive from first to last, and the above quoted statistics seemed to shew that there was more than mere theory in my supposition with regard to the connection between inhalation of dust and subsequent attack by the disease.

I next made a bacteriological examination of the fresh alimentary excreta of two mules, a horse, a goat, and a cow, which were all healthy and had all been in the spot for some time. A germ so similar to the "Micrococcus Pneumonae Crouposae" as to be indistinguishable from the latter in microscopical appearance, and staining reaction was present in four out of the five chicken broth cultivations made from these specimens.

I closed my work in connection with this subject by the examination of stained specimens of the sputa of six healthy sepoys and five healthy muleteers. Of these specimens all coming from sepoys contained "Micrococcus Pneumonae Crouposae," and four out of five coming from muleteers contained the same germ.

I shall now attempt to give an epitome of these investigations:—

- i. The "Micrococcus Pneumonae Crouposae" was detected in the sputa of nine out of ten healthy men within the post. Presumably therefore it was present in a large proportion of the sputa of all.
- ii. The sputa of thirty cases of acute lobar pneumonia taken seriatim, all contained the same germ.
- iii. A germ so similar to the "Micrococcus Pneumonae Crouposae," as to be indistinguishable from it in microscopical appearance, and staining reaction, was found in some of these cases of acute lobar pneumonia, in the urinary and alimentary excreta.
- iv. Nine out of ten specimens of soil from within and without the post, contaminated by animal excreta, contained a similar germ.
- v. Four out of six specimens of soil uncontaminated, as far as could be judged, by animal excreta did not contain a germ of the sort.

(The remaining two specimens did, but in the case of one contamination by human expectoration was strongly suspected, and in the case of the other there was no proof that the

soil was uncontaminated; it might have been by either human expectoration or by animal excreta.)

- vi. The fresh alimentary excreta of four healthy herbivorous animals, chosen at random from amongst others within the post, contained a similar germ.
- vii. Statistics quoted in this paper on the subject give some colour to the theory of a relation between the presence of quantities of dust in the air respired, and the subsequent appearance of cases of acute lobar pneumonia amongst troops and followers.

These investigations if correct, narrow down the scope of enquiry to two questions.

1. Which is it the human being or the herbivorous animal that originates the *materies morbi*?
2. What is the part played by each in maintaining the existence of the *materies morbi* once the latter has appeared?

I have said that the "Micrococcus Pneumonae Crouposae" was detected in the sputa of nine out of ten healthy subjects within the post. I have also stated that a germ so similar as to be indistinguishable microscopically from the "Micrococcus Pneumonae Crouposae" was detected in the alimentary excreta of healthy animals. Is there any connection between these two statements? In answering this question it occurs to one that the saliva of man, and the intestinal secretion of the whole intestine in herbivorous animals, resemble one another inasmuch as both are alkaline secretion containing a digestive ferment. A digestive ferment should, we might expect, be inimical to the existence of micro-organisms. We have evidence that saliva in man is inimical to the existence of germs, e.g., *Staphylococcus Pyogenes Aureus*." But the "Micrococcus Pneumonae Crouposae" is an exception, and seems not alone to exist in human saliva, but even to find the conditions of its existence therein favourable to development.

If this be so, there does not appear to be any reason why this germ should not also find the conditions of existence in the alkaline intestine of herbivora equally favourable, even more so, since in addition to the encouraging influences of alkaline medium, and warmth of surroundings, it would find itself in the midst of partly digested food in which it might temporarily thrive as it does in any suitable cultivation medium. It would appear indeed, if my conclusions be correct, that it does thrive in the herbivorous intestine better than in human saliva, since whereas it betrayed a tendency to form chains in the specimens of healthy human saliva which I examined (a sign, according to Kruse and Pansini, of slight virulence), I have not seen any approach to chain formations in the cultivations of the very similar germs which I made from the

alimentary excreta of healthy herbivorous animals and which, in the absence of contrary evidence, I presume to be the same.

Now it will be admitted that a horse, mule, camel, or cow would not have a germ of this kind in his intestinal discharges, unless he had swallowed it with his food. What more natural than that his food should have been infected by a few specific germs, of perhaps slight virulence (since it is nearly always at some time or another in contact with the ground near him before he eats it, and that ground most probably infected beforehand by the saliva of human beings, or by the discharges of the animal himself).

I am dealing, it is to be understood, with circumstances which I presume to occur when men and horses, mules and other herbivorous animals, are more or less crowded together in one place for long. If the idea be pursued further, it is possible to suppose that these few germs swallowed by the animal with his food, will multiply immensely within his alimentary canal, and at the same time gain an increase of virulence. It will be apparent then upon this presumption that the animal, whilst not suffering himself from the presence of the specific germ I have described, during its stay in his alimentary canal, will afford to the germ during that period a suitable temperature for development, an alkaline medium, and probably nutriment of a suitable kind.

To conclude then upon these lines one would say, that under the circumstances given, whilst man probably starts the evil, by expectorating upon the ground saliva containing "Micrococcus Pneumonae Crouposae," the horse, mule or other herbivorous animal extends and perpetuates the evil by acting towards the germ in the way that has been described, alternation of action on the part of man and horse finally resulting in the production of a state of things favourable to the outbreak of acute lobar pneumonia, and if carried to excess under suitable external conditions, to the outbreak of an epidemic of the disease.

How much of all this may be true under ordinary conditions, and in temperate climes I am not in a position to say.

There does not seem to me, however, to be any reason why the above conclusions should not apply also to temperate climes to the extent necessary to account for a fair percentage of the cases of acute lobar pneumonia which occur under ordinary conditions.

The above statements conclude the exposition of my views with regard to the etiology of that type of acute lobar pneumonia which prevails in the Tochi Valley.

With regard to the precautions which I adopted in taking specimens for bacteriological examination, I should state that soil specimens were lifted up and transferred to cultivation tubes on steel spatulas which had been previous-

ly heated for two minutes in the flame of a spirit lamp, and allowed to cool down before use.

With regard to specimens of the fresh alimentary excreta of animals, these were each divided by one sterilised spatula, and a small portion transferred from the interior of each with another.

The specimens of urine were received in bottles previously sterilised for three hours in a dry heat of 160° F., and a portion of each specimen was drawn off for addition to cultivation tubes in a sterilised pipette.

Similar precautions were observed with regard to the collection and transference to cultivation tubes, of specimens of human alimentary excreta (except in the case of the first specimen examined which was transferred, from the ordinary receptacle for such matters, upon a sterilised glass rod to the cultivation tube).

I regret that my incubator was of so rough and ready a description, and alternations of outside temperature so considerable, that I was unable to obtain the germ I have described in pure cultivation in gelatine; I had no agar. After careful re-examination of my preparations, however, I scarcely doubt that the germ I have described as present in most, a lanceolate or oval diplococcus taking Gram's stain, and so similar to, as to be microscopically indistinguishable from, the "Micrococcus Pneumonae Crouposae," is really identical with the latter.

I have hesitated for some time about publishing these results. I do so in the belief that they will be found to be true. I do not consider that I have proved my case; time alone, and the experience of observers more skilled than myself, will determine whether my conclusions are justifiable or otherwise. I encourage myself, however, in the hope that, if I have done nothing else, I have at least suggested a basis for further enquiry.

I propose to deal with some aspects of this type of acute lobar pneumonia especially with regard to its clinical phenomena, its relation to acute and chronic malarial infection, and its complications in the second portion of this article.

(To be continued.)

DIFFICULTIES IN THE PERFORMANCE OF LITHOTRITY, ETC.

By C. DUER, M.B., F.R.C.S.,

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RECENT literature on stone in the bladder would lead one to believe that cutting operations for the cure of this disease are very rarely neces-

sary. This may be so in Europe where surgical aid is more accessible, where patients and their relatives are better educated, more observant and less prejudiced, and where, as a consequence, stones are not usually allowed to attain to the same size as in India.

The performance of lithotomy in children is not infrequently impossible (1) from inability to pass the lithotrite, and (2) on account of the magnitude of the stone.

(1) The lithotrites commonly supplied in India for operations on children are No. 6 and No. 8 "Weiss' Gauge." It is most disappointing how frequently even in boys of four to six years of age, one finds it possible to pass these instruments into the bladder, the difficulty being apparently due to the breadth of the female blade at its extremity. After performing a thorough meatotomy, it is sometimes impossible to get the instrument to enter the urethra. At other times the instrument becomes arrested about the bulb or the distal end of the membranous urethra, and no manipulation or reasonable force will induce it to pass further. Dilatation by graduated bougies I have not found of much service.

(2) Having surmounted the first difficulty and grasped the stone, one is frequently disappointed to find the blades so widely separated, that the screw-crushing action cannot be brought into play. Pressing the blades together or slight percussion with a mallet on the head of the male blade will sometimes break through the softer outer layers of the stone and enable the blades to be sufficiently approximated. But in using such delicate instruments one feels the need of great gentleness in these manoeuvres. No one who has not tried crushing small stones with these lithotrites outside the body would believe how small a stone must be to be capable of being grasped by No. 6 lithotrite in such a way that the screw action can come into play.

Having failed to perform lithotomy in a child, we in India, speaking generally, proceed to the performance of lateral lithotomy, our main reason for selecting this operation in preference to the supra-pubic bring its much lower mortality. The only objection to the lateral operation worth considering would seem to be the subsequent atrophy of one or both testicles. Whether this occurs and how frequently, it is exceedingly difficult in India to decide. I have seen several adults in whom lateral lithotomy had been performed in childhood, both of whose testicles were healthy. I know of no other objection to lateral lithotomy, notwithstanding the appalling list of difficulties and dangers mentioned in the text-books. After the operation has been performed a few times, it will be found quite simple. I have only seen

failure to enter the bladder on one occasion : this was at a hospital in London, the operator being a distinguished surgeon, but probably not very familiar with lateral lithotomy. After incising the urethra, a most useful manœuvre is to carry the finger over the concavity of the sound and so into the bladder. The finger can be introduced with less cutting in this way, and possibly the danger of division of a seminal duct be decreased. The great use of rectal examination in the diagnosis of stone in the bladder in children is sometimes forgotten. In adults also lithotomy is sometimes impossible. In certain cases, on which very little stress appears to have been laid, the bladder is so hypertrophied and contracted around the stone, that it will not retain a drop of urine, and any water injected into the bladder is immediately expelled. In these cases it may be impossible to insinuate the lithotrite between the stone and the bladder. Such a case recently came under my care. The patient suffered from continual dribbling of urine. The lithotrite impinged on the stone, but could not be made to enter the bladder. Any water injected was immediately and forcibly ejected on removing the canula. By tying an elastic ligature round the penis, after introducing the canula, the bladder was sufficiently distended, and on removal of the canula the elastic ligature prevented the escape of the fluid, but the urethra between it and the bladder was visibly distended. Supra-pubic cystotomy was then readily performed. The stone weighed 2 oz. and was hour-glass in shape, the smaller extremity apparently lying in the prostatic urethra. The patient left the table with a good pulse and warm extremities, but died somewhat more than twenty-four hours after the operation. A fair amount of urine had passed. At the post-mortem the peritoneum was found uninjured, and there was no peritonitis. The bladder was contracted, and its wall measured nearly $\frac{3}{4}$ inch in thickness. The ureters were of normal calibre; the kidneys appeared quite healthy, and their pelvis and calices were not dilated.

It is exceedingly difficult to know to what to attribute the cause of death in certain cases after operation for vesical calculus. In the above case, before the post-mortem, it was thought that the peritoneum must have been opened and that death was due to peritonitis.

Again, women occasionally present themselves for treatment on account of constant dribbling of urine, and, on examination, the bladder is found enclosing like a mould a stone as large or larger than a cricket ball. The best and most expeditious way of dealing with these cases is by vaginal lithotomy and piecemeal removal of the stone, the outer layers of which can be fairly readily broken up ; but it is a tedious procedure.

BODY TEMPERATURES OF GURKHAS AND OTHER HILL TRIBES.

BY H. HAMILTON,

L.T.-COL., I.M.S.,

1-3rd Gurkha Rifles, Almora.

I SEND herewith ten temperature charts—seven taken in the hospital, 1-3rd Gurkhas, and the rest kindly taken for me by Dr. Miss Pant, of Almora, among the members of her family. These charts show conclusively that the commonly accepted ideas regarding the normal temperature of the body must be very considerably modified as regards Gurkhas certainly, and probably as regards other Himalayan inhabitants. Four of the charts are of men who were sick in hospital with different diseases, and it will be seen in each case that, as recovery became established, the temperature fell to about 96° or 97°, and remained there. Three are of sick attendants who were not ill, and it will be seen that in each case a rise to 98° indicated some slight ailment such as a cold or an attack of indigestion. The three charts taken by Dr. Miss Pant show, as far as the small number goes, that the normal temperature of the inhabitants of Almora is also in the neighbourhood of 97°. An examination of the case-book in the 1-3rd Gurkhas' hospital shows invariably that, when a patient is recovering from any illness, his temperature falls to 96° or 97°, and that he is not well till it has done so. A temperature of 98°·4 in the morning in a Gurkha is always unsatisfactory, and in some cases may be of very serious import.

[The first chart shows a "sub-normal" temperature from 12th to 24th day of illness (gunshot wound.)]

Second chart—Six days "sub-normal" temperature, patient complained only of not feeling well.

Third chart—Seven days "sub-normal" temperature, on eighth day tongue dirty, slight diarrhoea, temperature rise to 98°, next day fell to 96°.

Fourth chart—Same as second chart from fourth to ninth day.

Fifth chart—Pneumonia. Eleven days fever, gradual lysis, then for sixteen days temperature between 97° and 98°.

Sixth chart—"Remittent fever" for fourteen days, then seven days at 97° or 97°·2 F.

Seventh chart—Primary syphilis, one week irregular high fever, then temperature remained at 97° for fifteen days.

Eighth chart—A temperature remaining at 96°, or 97° for thirty days.

Ninth chart—Same as eighth.

Tenth chart—Temperature for thirty days always under 98°, taken twice or thrice daily.]

3 Million of Hospital Practice.

CASES OF ECTOPIC GESTATION.

BY A. J. STURMER,

LIEUT.-COLONEL, I.M.S.,

Superintendent, Government Maternity Hospital, Madras.

(Continued from p. 100.)

Case VII.—Hindu, *at.* 30, admitted 6th July, was under the care of Miss Macphail, M.B., who sent her on to me for operation. Whilst with Miss Macphail for one month, she gave a history of amenorrhoea for two months, accompanied by severe abdominal pain and discharge of blood per vaginam. Whilst under observation she had two attacks of very severe pain, restlessness, collapse and high fever. Previous to this she was under native treatment and noticed that her abdomen was increasing in size. Has had three children, the last eight years ago. Menstruation regular and painless. Is a very thin, anaemic woman. The abdomen is distended, soft and fluctuating; skin smooth and shiny; flanks are bulged out; a fluid thrill is felt. Heart sounds abnormal; cervix very soft; uterus in front, no ballotment; swelling behind; speculum; anterior vaginal wall bulging down very much; no discolouration of vagina; lips of os slightly bluish.

15th July.—Has had fever daily. Abdomen has decreased in size, but her general condition is scarcely any better. Is very emaciated and weak; was examined to-day; anterior vaginal wall very lax. Uterus lies to the left side and to the front. Behind and to the right is a soft cystic swelling, which is not reflected on to the pelvic wall. Pelvis clear.

22nd July.—Abdominal section performed for ruptured extra-uterine gestation cyst. Commenced at 8-45 A.M., finished 9-45 A.M.

A small incision was made, which later on was extended. On opening the peritoneal cavity, some ascitic fluid oozed out; next some black blood was sponged away. On introducing the finger into the abdomen the intestines were found adherent to a mass, the size of a goose's egg or larger, and were coated with old blood clot and lymph. These were carefully drawn back and the hand introduced; it went deep into the pelvis behind the tumour, which was situated chiefly on the right side. The uterus was pushed over to the left. Adhesions had to be broken down and the tumour gradually brought to the surface. It was very soft and broke down on the slightest pressure. A great deal of old blood clot enveloped in fibrin was removed, especially from the right side of the abdominal wall to which it was firmly adherent, as well as to the uterus, bladder and intestines. The right broad ligament was ligatured in two sections and the parts removed. Active haemorrhage continuing from the stump,

pressure forceps were applied to the ovarian artery, and another small vessel was tied with fine silk. Oozing also occurred from the part from which the old clots had been removed. A litre of salt solution was injected into the rectum, and the abdominal wound closed. The parts removed consisted of the amniotic sac, a foetus much discoloured, evidently undergoing maceration, about five inches in length, with a long cord in which there were several twists. The mouth of the foetus was widely open, but the eyelids were closed. The cord lead to a chorionic mass in which placental structure could not be discovered. The ovary contained an old and small corpus luteum. It and the tube were enveloped in a mass of blood clot. The several parts of the tube could not be made out, nor where the rupture had taken place.

The after-history is a very long one; she seemed on the point of death in more than one occasion, but rallied to our surprise each time. On the 27th July some of the stitches were removed, and it was found that union had not taken place; as there was a good deal of distension, a pair of forceps were pushed into the wound and a large quantity of bloody fluid escaped, followed by some pus. Later on a tube was introduced into the same, which was cut off from the abdominal cavity. At first she suffered from continual rises of temperature, and her pulse kept abnormally fast. At the time of writing she is still an inmate of the hospital; she has gained flesh very considerably, is able to walk about, but still has a sinus leading almost to the right iliac fossa. This is gradually, but very gradually, filling up. Her temperature is normal, and the pulse rate has fallen. At the time of operation I never expected her to recover. Why this sinus is left I cannot say; there is no ligature at the bottom.

Case VIII.—Eurasian, *et. 31*, admitted 13th September, has had one child 16 years ago, and an abortion at the 5th month, 14 years ago. Periods regular, lasting 8 days, painless, no clots or shreds. Had a period in May, none in June; in July she had a fall, and a few days after that she noticed a red discharge from the vagina. This was accompanied by severe pain in the lower abdomen, shooting down the thighs; slight rise of temperature in the evenings, inability to pass water and slight haemorrhage from the vagina. She was treated in a hospital for 32 days, where she was told she had aborted. Subsequently she was informed that she was still pregnant. Her breasts were distended and contained milk, but there is no secretion now. Finding she was not improving, she came to the Maternity Hospital. An examination showed that the uterus was anteflexed, and only slightly tender. On the right-hand side of the uterus, and closely attached to it, was a soft cystic tumour extending as far as the pelvic wall on the right side. The uterus was fairly central. There was a slight brownish discharge on the

finger. The case was diagnosed as a ruptured tubal gestation, and laparotomy was performed on the 20th September. Operation commenced at 8-35 A.M., finished at 9-30 A.M. The abdominal walls were thickly covered with fat and were very vascular. On inserting two fingers into the peritoneal cavity, the uterus was found anteflexed with a tumour closely adherent to it behind and on the right side. This was gradually enucleated, and during the process, old, black and discoloured blood oozed out. The right tube was brought to the surface together with the tumour, tied in a double loop and cut off. There was very little oozing after the removal.

The parts removed consisted of the right tube which was removed very close to the uterus, and a small cyst below the tube. On opening the cyst, it was found to contain some light yellow fluid like amniotic fluid. The cyst appeared to be the ovum; it was smooth internally and lined with a fine smooth membrane like the amnion; no trace of an embryo could be found, and no chorionic villi were detected. The tube was greatly enlarged, was thicker than the thumb and contained blood clot. It had ruptured nearer to the uterine end; the abdominal end was closed and filled with brown clot, whereas the other end was full of hard black clot. An old blood clot coated with fibrin was first dissected out. All the rest of the blood effused had apparently been absorbed.

The after-history was uneventful. The highest temperature recorded was 99°. There were no complication of any sort, and she was discharged on the 11th October.

The fall precipitated matters, and evidently was the cause of the rupture; the tube was no doubt much thinned and would have ruptured later. The history in this case is a very typical one,—no pregnancy for many years. Then suppression of menstruation, rupture of tube and discharge of blood per vaginam (if it had not been for the fall, the latter would have occurred most probably before the rupture), great pain and a swelling to be felt at one side of the uterus, and milk in the breasts.

A CASE OF DEPRESSED FRACTURE OF THE SKULL.

BY A. W. DAWSON,

MAJOR, I.M.S.,

Civil Surgeon, Roorkee.

A HINDU, aged 33, was admitted into the Civil Hospital on the evening of the 14th October 1899, suffering from depressed fracture of the frontal bone, with laceration of the brain. During an explosion of some fireworks at a native festival he was struck by a piece of bamboo, eight inches long and one and half inches

in diameter. When admitted to hospital, about two hours after the injury, he was more or less conscious, pupils dilated, pulse slow and weak, tongue dry. There was slight bleeding from the wound, which before had been considerable. The wound was circular in shape, one and half inches in diameter, and situated in the centre of the forehead, the lower margin being about half an inch above the nasal bones. The splinters of the bone had been driven into the brain, which was lacerated and protruded slightly. There was considerable discharge of cerebro-spinal fluid. The edge of the bone around the fractured part was clean cut and not depressed. The splintered fragments of bone were removed, portions of the brain also coming away. The wound was dressed antiseptically. Next morning the patient was quite conscious; temperature 98°F., pupils slightly dilated. He had vomited once during the night. He complained of headache. On removing the dressing a little of the brain substance came away on it, and pulsation of the brain was marked. The discharge of cerebral fluid continued for eight days, so much so that the wound had to be dressed daily. The severe headache continued for about ten days. The temperature never went above 99° F., and after the fourth day was below normal. Recovery was uninterrupted and complete. He left hospital in three weeks in perfect health, the wound being healed, leaving a depressed scar. No pulsation could be discovered. He has now returned to his ordinary occupation.

CANCER OF THE PLEURA.

BY GOPAL CHUNDER CHATTERJEE.

ASST.-SURGEON,

Dr. B. N. Bose's Hospital.

I AM permitted to report the above case through the kindness of Dr. Harris, Principal, Calcutta Medical College. The patient was in his ward while I was his house physician.

Patient named K. O., a Mahomedan female, aged forty-eight, was admitted in the Medical College Hospital with a history of three months' illness. Her chief complaint was pain over the left shoulder-blade which was so severe as to make her life a burden to her. She had a slight cough from the beginning which became troublesome towards the end. There was no history of haemoptysis.

The following were the symptoms and physical signs present at the time of admission:—The patient was rather emaciated and had a very careworn and cachectic face. There was lateral curvature of the spine, convexity being towards the right side. The left shoulder-blade was depressed; and she had a peculiar stiff gait, when walking. The left side of the chest was markedly tender. There was no oedema

of either upper extremity. The axillary glands were not enlarged.

Physical examination of the chest revealed marked immobility of the left apex and marked dulness on percussion. Vocal resonance and fremitus were slightly increased over this region. There was distant tubular breathing audible. The upper part of the axillary region was dull on percussion. No breath sounds could be heard. In the lower part of the axilla distinct vesicular breathing was audible. Over the left scapula, it was dull on percussion; dulness had a peculiar woodeny character, not at all like that present in ordinary consolidation. Vocal resonance and fremitus markedly diminished. Distant tubular breathing was audible. The left base was slightly dull in comparison to the other side. Vocal resonance and fremitus were increased over the base.

Heart apex was in the normal situation. Heart sounds normal. Heart sounds were distinctly audible at the back over the left scapula. Urine normal.

Progress of the case.—Four days after admission friction sound became audible at the left axilla. Left base became gradually dull on percussion with loss of vocal resonance and fremitus. At the level of the angle of the scapula, about one inch to the left of the spine. There was a spot, area of which could be covered by the chestpiece of a stethoscope, where pectoriliquy and cavernous breathing could be made out.

The physical signs remained unchanged from this time up to the time of her death, which occurred two months later, except the appearance of some loose rales in the axilla towards the end of her life. There was no expectoration at the beginning. About a week before her death, she used to bring up purulent expectoration. There was no haemoptysis at any stage of her disease. She used to get evening rise of temperature about 100 or 101° every evening.

Pain was her main symptom, and this became worse towards the end. She could not get any sleep or rest except what she could get when under the influence of morphia.

Her general condition became gradually worse, and she died of general marasmus.

Diagnosis.—At the time of her admission, from the peculiar nature of her signs and symptoms, a diagnosis of *malignant growth in the pleura* was made. The principal points which guided us in the diagnosis were (1) curvature of the spine; (2) constant pain; (3) absence of marked cough and absence of phthisical sputum; (4) the peculiar woodeny dulness at the upper part of the lung while the base was comparatively resonant; (5) absence of displacement of the heart. All these points served to distinguish it from the tuberculous disease of the lung or pleuritic effusion.

But there was some doubts, as there was no haemoptysis which often accompanies cancer of

the lung; also the presence of hectic rise of temperature was also against it.

Post-mortem examination was held by the late Dr. Evans, through whose kindness I was able to get a copy of the report of which the following is a brief summary:—On opening the chest, the left lung was firmly bound down to the chest-wall. On removing the ribs down to the spine, the pleura was found abnormally thickened, fully one inch in thickness, and was the seat of cancerous infiltration. The lung was found collapsed and was no bigger than a fist.

The pleural cavity contained six ounces of clear fluid. Kidneys and liver and spleen contained secondary growths. Cancerous growths were found in the vertebral column occupying the position of the intervertebral discs.

Remark.—This case is very interesting, firstly, on account of its rarity; secondly, it is interesting from the clinical aspect, on account of the peculiar physical signs; and, thirdly, from its pathological importance.

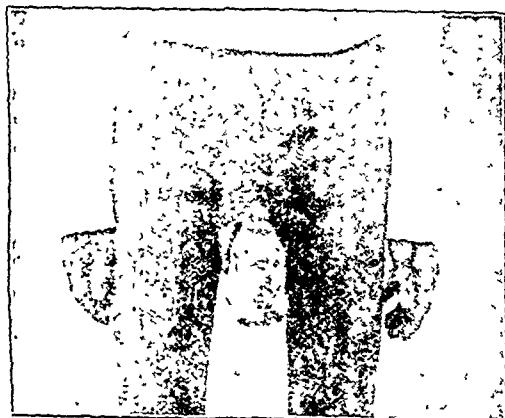
ELEPHANTIASIS OF THE PENIS.

By O. W. JONES, M.D., L.S.A.,

Wun District, Yeotmal, Burma.

DEEN MAHOMED, a convert to Mahomedanism, aged about 50 years. This man, a native of Upper India, sought admission into the Civil Hospital, Yeotmal, on the 31st July 1899, suffering from elephantiasis of the penis.

Past history.—States that eight years ago he observed that his penis began to get enlarged. The hypertrophy of the organ was steady but gradual.



Present state.—The penis is seven and half inches long with a circumference of eight and half inches. The tissues surrounding it are much hypertrophied but not painful to the touch; the skin is discoloured here and there with white patches, the result of native treatment. Health bad and unfit for surgical operation. He was carefully nursed and fed up till his general health had sufficiently improved

to enable him to stand the necessary operation which was done on the 19th September 1899.

Two photographs are enclosed, one showing the elephantoid tumour before and after its removal.

The operation was performed by making one deep and bold incision from the root to the tip of penis well into the hypertrophied mass. This mass was next carefully dissected away from the penis, and by a circular sweep of the knife the whole tumour was amputated, as the prepuce was healthy, a portion of it was reflected to form a covering (see Fig. 2).



There was hardly any bleeding, a few minute arteries needed twisting, otherwise the operation was bloodless. Before beginning the operation the penis was bandaged and elevated so as to drain it of all surplus blood, while a clove hitch was hitched on to the root of the penis. The tumour was made up of a mass of white fibrous tissue.

Remarks.—In India elephantiasis prevails in an endemic form all along the Malabar Coast, and is very rife at Cochin, where it is called the "Cochin leg." Males suffer more than females, the proportion being 2 to 1. It is a disease of adult life; children as a rule are free from the disease. It chiefly affects the lower extremities and genital organs. The morbid changes begin in the lymphatics and mainly involve the skin and subcutaneous connective tissues. As a rule, the disease begins with all the symptoms of local inflammation accompanied with febrile symptoms. In a primary case affecting the lower extremity the chief symptoms are heat, redness, and rapid swelling of the affected limb; the lymphatics and superficial veins are painful to the touch.

The adjacent lymphatic glands also participate in the inflammatory changes. This inflammation rapidly subsides and is often repeated at longer or shorter intervals, till the limb is permanently hypertrophied. These were the symptoms that were observed by me for the short period I was Civil Surgeon of British Cochin.

In a chronic case, parts of the skin covering the affected limb become warty, ulcerated, or horny. It is worthy of note that an elephantoid tumour affecting the male genital organs, and varying in weight from 50 to 60 lbs. is carried

about with apparent ease and with hardly any appreciable inconvenience. Two cases are cited to prove that the seat of the disease is in the lymphatics. Several years ago I was called to see a gentleman who complained to me that he periodically suffered from a watery discharge from his groin. On examination the discharge was found to be lymph, and was seen to exude from two or three nipple-like projections. Beyond this, there was no elephantiasis of limbs or genitals. After an elapse of several months I was summoned to see his daughter concerning a local inflammation and hypertrophy of her right leg. She was at his period suffering from febrile disturbance with redness, heat, and swelling of the affected limb. These symptoms disappeared after two or three days, and were repeated at intervals, till there was no mistaking the fact that this young unfortunate lady was a victim to the disease. The father escaped suffering from elephantiasis of his lower extremities or genitals, because nature provided for the escape of the specific lymph through the two or three nipple-like elevations in his groin, and had not this provision been made, there would have been general infiltration of this organizable material into the connective tissue and skin during each successive attack terminating in elephantiasis, either of his limbs or scrotum.

A CASE OF HYSTERICAL COMA.

BY A. C. GUPTA, M.B.,

ASST.-SURGEON,

Chinsurah Hospital.

A NATIVE female named Sukhia, aged about 45, was found lying in an unconscious condition in a garden adjoining her house and brought by the police to the Hospital at 8 P.M. on the 17th of October. The police could give no history of her condition except that she was found in the state in which she reached the hospital. I saw her at 8-30 P.M., and found her perfectly unconscious; eyes closed, appearance calm and placid; frothy fluid coming out of her mouth; arms, forearms, and hands lying quiet on her side; no stirring of the limbs, no tossing about from side to side; respiration normal in rhythm and number and perfectly noiseless; there was a peculiar sweetish odour emitted from her body quite unlike that of opium, liquor or uremia. As soon as I opened the lids the eyeballs rolled upwards, and the pupils were visible only for a short time to make thorough examination possible; as far as could be made out they were found to be normal.

Her mouth was closed, jaw perfectly rigid, teeth set against one another; no attempt on my part could make her open the jaws. I closed the nostrils, kept them so for one

minute; still the condition remained as before. There was no spasm of the muscles of the upper limb; abdomen perfectly flaccid; but the lower limbs were rigid and straight; it required a good deal of strength to bend the knees, and when laid upon the bed, they were rigid again. I waited for five minutes to see any convulsion but there was none.

Then I tried to rouse her consciousness, slapped her on the face, on the chest; pinched her; pricked her with a needle; applied a lighted match on the forearm and leg; employed the battery, but not a limb would stir; the muscles were as motionless as ever. I tried to pass the catheter; during this act only she resisted for a time and crossed her rigid legs one upon the other; catheter was passed, and 4 oz. of clear urine drawn out; the urine was examined and found to possess a low sp. gr. (1010); but no albumen and no sugar; reaction normal; there was no paralysis of the face; reflexes both superficial and deep were absent. Nothing abnormal detected in the heart and lungs.

Under the circumstances of the case the diagnosis remained uncertain; poisons, such as opium and alcohol, were out of the question; tetanus and strychnine poisoning may be thought of, but such a complete anaesthesia, unconsciousness, flaccidity of the abdominal muscles, absence of convulsions were alone sufficient to set them aside. No previous occurrence of hysterical or epilepsy could be made out, because there were no friends or relatives of the patient. Apoplexy might be suspected; but the absence of paralysis of the face or any other part of the body, character of the breathing, nature of reflexes, subnormal temperature, were all against it. In these circumstances I thought that the case might be one of uremia and the low specific gravity of the urine, spasms of certain parts of the body, unconsciousness, were in its favour; but there were many symptoms already noted which contra-indicated it.

Whatever the disease might be, the patient being very low with an algid temperature, soft and feeble pulse, I injected ether m. xx, hypodermically covered her with blankets, and put hot bottles to the extremities, then after half an hour injected pilocarpine nitrata gr. $\frac{1}{6}$ and caffeine citras gr. I with distilled water m. xv, hypodermically, but she remained as before; the injection was repeated 4 hours afterwards, but no improvement could be made out. In the morning the Civil Surgeon was consulted; he also could not arrive at any positive diagnosis, and instructed me to inject ether m. xv and acid carbolic m. i every two hours; this was done for the whole day. In the night she remained without any medicine; during these hours she never moved for a moment, nor passed urine or stool; bladder was relieved by catheter every six hours.

(To be continued.)

THE
Indian Medical Gazette.
 APRIL, 1900.

THE PLAGUE COMMISSION REPORT.

CHAPTER IV of the Report of the Plague Commission, which is published in the *Gazette of India* for February 24th, is a very interesting and valuable document. The present chapter is only an instalment of the whole report which will run into two or more volumes, but it deals in a full and most detailed manner with the whole question of inoculation against plague.

The chapter begins with a brief historical sketch of the question of inoculation against disease, from Jenner's vaccination against small-pox down to the present day. Coming to plague the report subjects Mr. Haffkine's method to a most minute and searching criticism, with special reference to the details of the preparation of the vaccine and the published results. The Commission enter into a minute criticism of the method of standardization attempted by Mr. Haffkine, which they show to have been in practice not as satisfactory as modern bacteriological methods demand. Therefore early in their inquiry they recommended that the inoculator should be relieved of the task of standardization, and that all the operations required for this purpose should be carried out in the laboratory before the vaccine is sent out. The question of securing the absolute sterility of the vaccine, that is of preparing it absolutely free from contaminating micro-organisms, a subject which our readers may remember excited considerable discussion at the sitting of the Commission, is very fully discussed, and all the statements then made, especially those at Hyderabad, are carefully analysed, with the result that it is said that at that time no less than 22 per cent. of bottles examined were shown to be contaminated, but it is also shown that it is possible "to secure that the vaccine sent out shall be in a perfectly aseptic condition, and this apparently without forfeiting anything of its efficacy." It is also decided that the supernatant fluid in the vaccine does not lead to the elaboration of any substances which are capable of favourably modifying a plague attack; hence it would appear that

this supernatant fluid might with advantage be dispensed with. Such an elimination would render the task of inoculation much less laborious, diminish the danger of possible contamination, and get rid of from the vaccine of a considerable quantity of poisonous peptone, which stands in no known relation to the production of immunity. But while the Commission thus from a high scientific standpoint criticise the vaccine, they recognise the reasonable view of Mr. Haffkine that the good and evil results of inoculations must be judged, not from experimental data obtained in the laboratory, but rather from the results which have actually been obtained in man. They moreover clearly state that no evidence was laid before them which goes to show that any serious ill consequences have resulted from the defects in sterility which they have criticised. "In an overwhelming majority of cases no evidence was adduced to show that any injurious consequences had supervened upon inoculation." In a few isolated cases abscesses had occurred at the seat of inoculation, and in some cases the reaction was stronger than necessary. The report next goes on to detail the evidence in favour of the inoculations, and submits all the reported cases to a most thoroughly minute and searching critical analysis. It is impossible for us to follow the Commission here in the space at our disposal. We commend this portion of the chapter to our readers; it is, we consider, a valuable lesson in the method of weighing statistical results, and indeed the method of criticism employed is applicable to many kinds of medical statistical inquiries. It must be enough for us to say that every reported case where it was possible to adjudge of the possible value of inoculations among plague-stricken communities have here been submitted to minute and careful analysis, with the result that while in most cases it is not possible to state the value of the inoculations in exact mathematical terms, yet in every case the Commission have decided that the balance of the evidence is strongly in favour of the inoculations.

We recommend our readers to read for themselves the rigorous and impartial criticisms of the well-known cases of inoculated communities, e.g., the case of the Byculla House of Correction, the case of Lower Daman, that of Hubli, where Captain Leumaun, I. M. S., reported upon the results of the vaccination of a whole

community of nearly 40,000 people. The case of the inoculations at Undhera, which was the subject of a special report by Surgeon-General Harvey, is examined in detail and is regarded as "the most important experiment regarding the effect of inoculation which has yet been carried out." As regards the inoculations at Hubli, while the commission cannot accept the arithmetical estimate put forward by Captain Leumann, I. M. S., yet they attempt to make an arithmetical calculation themselves, which shows that "it would appear that 987 lives were saved in Hubli by inoculations during five weeks." The Report also discusses the possibility of determining how soon protection is acquired, but it is decided that from the figures supplied, it is not possible to arrive at any conclusion as to whether the percentage of attacks among inoculated persons has been greater or less in the first few days after inoculation than in the subsequent period. The question of a weaker or a stronger dose of the vaccine, or of one or two inoculations is also discussed; it is agreed that (as Mr. Haffkine claimed) larger doses are more effectual than reduced ones, but as regards the question of a single or a double inoculation it appears that the results are so very divergent that it is impossible to draw any safe conclusion from them, in fact we can only seek for an explanation of these divergent results in the varying strength of the vaccine. This only emphasises what the Commission strongly insist upon, viz., the importance and necessity of an accurate method of standardization. The next point touched upon is a very vital one, viz., the duration of immunity after inoculation, and it is unfortunate that here again the statistics placed before the Commission do not afford them any solid grounds for arriving at any positive conclusion on this matter. This part of the Report concludes by stating that certain statements made from time to time on the supposed effects of plague vaccine in warding off other diseases "are not deserving of serious attention," in fact some of the statistics presented prove too much, so that it would appear from them that not only is the vaccine good as a protective against plague but it is even more so against other diseases. This is obviously absurd and only reflects strongly on the value of some of the figures supplied to show the value of the inoculations in plague.

In concluding this necessarily too brief review of the results of the labours of the Plague Commission we may quote their summary of results—(1) on the nature and effects of Mr. Haffkine's vaccine; and (2) on the general policy of inoculation and the attitude of the peoples of India thereto—

"I. Inoculation sensibly diminishes the incidence of plague attacks on the inoculated population, but the protection which is afforded against attacks is not absolute. On the one hand, plague has attacked persons who have undergone inoculation as many as four times in the course of two years previous to their attack. On the other hand, as many as 8 per cent. of the inoculated population may suffer from plague, as was the case in Bulsar. Many varying influences have been at work in determining the rate of attack in different places, and it is impossible to give a numerical expression for the measure of protection against attack which inoculation confers.

"II. Inoculation diminishes the death-rate among the inoculated population. This is due not only to the fact that the rate of attack is diminished, but also to the fact that the fatality of attacks is diminished. Here, again, no numerical expression for the amount by which the death-rate is diminished can be given.

"III. Inoculation does not appear to confer any great degree of protection within the first few days after the inoculation has been performed. This fact, we may note in passing, has an important bearing on the risk of infection which would be incurred by recently inoculated persons if they were left behind in surroundings so plague-infected as to render their evacuation by the uninoculated desirable.

"IV. Inoculation confers a protection which certainly lasts for some considerable number of weeks. It is possible that the protection lasts for a considerable number of months. The maximum duration of protection can only be determined by further observation.

"V. The varying strength of the vaccine employed has apparently had a great effect upon the results which have been obtained from inoculation. There appears to be a definite quantum of vaccinating material which gives the maximum amount of protection; and provided that this quantum can be injected in one dose, and provided also that the protection turns out to be a lasting one, re-inoculation might with advantage be dispensed with. The best results of inoculation will only be obtained after an accurate method of standardization has been devised."

"(1) Experience gained hitherto has shown that it is very seldom possible to get a large proportion of the inhabitants of an uninfected place inoculated.

"(2) It has been possible, where the inducement of exemption from segregation and eviction has been offered, to get a large proportion of the inhabitants of an infected place inoculated quickly.

"(3) It has been possible in one place, Mysore City, even where no inducement that touched the great mass of the people could be offered, to get a considerable

proportion of the inhabitants of an infected place inoculated quickly.

"(4) It has been possible also to induce a large proportion of particular communities, such as the Khojas of Bombay and Karachi, to be inoculated under the influence of their leaders."

In conclusion we commend the study of this chapter in the Report to all medical men in India. For our own part we consider that one fact clearly emerges from it, *viz.*, that the use of inoculation certainly reduces the liability of attack, and certainly reduces the percentage of death-rate among those attacked. It has been found impossible to state these facts in terms of mathematical precision, but they are not the less trustworthy on that account. When we remember that in the somewhat similar case of the question of vaccination against small-pox, it has been found impossible to produce statistics even from the most highly civilised countries which will satisfy every one, it was hardly to be expected that in such a time of stress and trouble as has existed for the past three and a half years in the plague-stricken districts of India that any more satisfactory figures or statistics more reliable would be forthcoming. The judicial impartiality of the Report is patent to every reader, and the value of its strong recommendation in favour of inoculation is enhanced thereby. We can heartily congratulate Mr. Haffkine on his method having so successfully emerged from such a critical ordeal, the more so as the improvements suggested by the Commission will prove not difficult to carry out, and will put a still more potent weapon into the hands of sanitarians to wage their war against plague.

LONDON LETTER.

THE ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION.

THE "preliminary programme" of the annual meeting of the British Medical Association which is to be held at Ipswich on Tuesday, Wednesday, Thursday and Friday, July 31st to August 3rd, inclusive, has been issued. It includes a list of the office-bearers of the Association and of the thirteen sections, the names of those who are to deliver addresses on medicine, surgery and obstetrics, and a general time-table of the proceedings of the meeting. It remains now for the officers of the several sections to arrange for the business which will be transacted in each. This will, as usual, consist of

discussions on previously selected subjects and the reading of papers. The subjects which have been adopted for discussion in the tropical diseases section, which will naturally claim the special attention of medical men practising in the tropics, are:—

1st—Quinine and its action and modes of employment in malaria.

2nd—Anchylostomiasis.

3rd—The etiological and pathological relationships of yaws.

On each of these topics interesting and important questions arise and valuable information ought to be forthcoming.

THE PROPHYLACTIC USE OF QUININE.

One of the main points concerning the use of quinine in malaria is its preventive function. This presents a twofold aspect accepting its germicidal power as regards the plasmodia of malaria and conceding the point as regards their being a contagium vivum capable of multiplication in man and conveyance from man to man by certain agencies; the destruction of these parasites in the blood must necessarily exercise a prohibitive influence of a radical kind, and this point has recently been emphasised by Bignami in a paper published in the *Lancet*. But does the drug also hinder development and multiplication of the germs in the blood to such an extent as to avert or abort pathological consequences in persons inoculated or infected by these organisms? Or, generally, does it counteract or inhibit the action of the malarious noxa whatever its nature? On this phase of the question it is very desirable that the results of the trials which have been made in Indian gaols for some time past should be intelligently studied and summarised. A mere comparison of one year with another or one community with another will not suffice. A comparison of two sections of the same community living in all other respects under identical conditions is necessary. In other words we must have controls. Recorded experiments made under such circumstances would be greatly prized.

ANCHYLOSTOMIASIS.

The principal points relating to this form of anaemia and cachexia arising from infection by the anchylostomum duodenale are the relation of the constitutional depravity to the number of parasites infesting and the health and condition of the host infested, and the relation of the

cachexy to other tropical cachexies such as chronic paludism, tropical or scorbutic anaemia and *beri-beri*. The experience gained by a study of the condition in Assam and Ceylon on the one hand, and in Egypt and Brazil on the other, ought to establish contrasts and checks which should place the true causation and gravity of the complaint on a more satisfactory basis.

THE ETIOLOGY AND PATHOLOGY OF YAWS.

Is this disease an exanthem or an infective granuloma? Is it a secondary manifestation of syphilis or a disease *sui generis*? Are these mutually protective? Is yaws communicable and self-protective? What is the precise nature of the "paranghi" disease of Ceylon? What of the verruga of the elevated valleys of the Andes? What affinities do these possess with framibia, if any? These are some of the questions on which more light is wanted and a surer decision required. The discussion will give opportunity for men hailing from different and widely-separated places to contribute the results of their observation and experience. It is this bringing together of many men from many parts with many facts and many views which imparts to these meetings their special interest and use, and I hope that the present meeting of the tropical diseases section will equal, if not surpass, its two predecessors in these respects.

THE MOSQUITO THEORY.

The Liverpool School of Tropical Diseases has issued a pamphlet of "instructions for the prevention of malarial fever" based on a thorough acceptance of Laveran's plasmodia as the parasitic cause of malarial diseases and of certain species of mosquito as the agents of transference of these from the diseased to the healthy organism. On this basis the pamphlet is both logical and lucid, and its precepts admirable. About the same time that I received this pamphlet your January number came to hand in which both the props on which these views and instructions rest are roughly and somewhat dogmatically assailed. Nothing but benefit can be derived from criticism, especially when founded on research, and the principle of *audi alteram partem* is unquestionably sound; but it strikes me that the element of detraction and contentiousness which is too apparent in the article to which I refer ought to be vigorously eliminated as its existence or apparent existence serves largely to depreciate the value of the work.

SIR JOSEPH FAYRER'S REMINISCENCES.

It has been known for some time that Sir Joseph Fayrer has been engaged in compiling the annals of his eventful life and brilliant and useful career. The announcement is now made that this work will shortly be published. It will be read with avidity, and as its distinguished author has been in the habit of making copious notes of all the important incidents of his service, the book will be a rare treat for members of the Indian Medical Service who have learned to look upon him as a guiding star and champion. Loyalty to his own service has ever been one of the most influential motives of Sir Joseph's life, and I doubt not that this has awakened a feeling of grateful recognition in the service at large.

THE SUPPRESSION OF RABIES IN GREAT BRITAIN.

It is reported that for the present at any rate rabies is extinct in Great Britain, and in consequence the muzzling order has been cancelled with a few unimportant exceptions. This satisfactory result has been obtained by measures directed against rabid dogs obtaining entrance into the kingdom, and preventing dogs which become rabid in the kingdom from communicating the disease to man or beast by means of the muzzle. The result is a signal and successful example of the utility of operating against diseases common to man and the lower animals by taking steps to thwart the communication of these by the latter to the former. The campaign against mosquitos and rats derives justification from this experience. Of course, the steps appropriate in different instances must depend upon the differing circumstances of the case; but the principle is an important one, and its execution adds materially to our preventive resources against disease. It is curious to find the property of infectiveness used in warfare for the purpose of disabling an antagonist. The Boers at Modder River are said to be allowing horses affected with "pink eye" to stray into the British camp apparently with the object of crippling our cavalry. This dodge is in keeping with the reputed use of cyanide of potassium for the purpose of poisoning water-courses, a barbarous and murderous expedient which our enemies are said to adopt when the occasion offers.

COLLECTIVE INVESTIGATION.

THE PREVALENCE OF ANCHYLOSTOMA IN INDIA.

OUR readers will much oblige if they will answer as many as possible of the following questions, as to the prevalence of the intestinal parasite, ancylostoma duodenale (*dochmias duodenalis*).

A merely negative answer is of importance, and of great importance if the worm has been searched for and not found. We refer our readers to the note on this subject which Captain L. Rogers, F.R.C.S., I.M.S., at our request, has kindly drawn up :—

| QUESTIONS. | ANSWERS. |
|--|----------|
| <p><i>A.—General Considerations.</i></p> <p>(1) In what districts has your experience been obtained ?</p> <p>(2) What is annual rainfall, duration of cold and hot weather ?</p> <p>(3) Among what classes of the population have you made your observations—Native troops, prisoners or the general population ?</p> | |
| <p><i>B.—Frequency of ancylostoma in healthy persons or in those who have died from acute disease.</i></p> <p>(1) In what proportion of cases have you found the worm or ova ?</p> <p>(2) In what numbers has the worm been found ?</p> <p>(3) Has the worm been found alone or with other worms ?</p> <p>(4) Have you found recent or old lesions in the gastro-intestinal tract, which have been produced by this worm ?</p> | |
| <p><i>C.—Ancylostoma complicating other chronic anaemia-producing diseases (malaria, dysentery, syphilis)</i></p> <p>(1) In what proportion of cases have you found the worm or its ova ?</p> <p>(2) In what numbers were the worms found ?</p> <p>(3) Have you ever found similar gastro-intestinal lesions without finding the worm ?</p> <p>(4) Did you consider the worm was present in sufficient numbers to constitute a material complication ?</p> | |

D.—*Anchyllostomiasis.*

(1) How many cases of clinically evident disease caused primarily by the worm (present or previously present) have you seen?

(2) On what grounds has the diagnosis of Anchyllostomiasis been made?

(3) In such cases, what numbers of Anchyllostomata were found *post mortem* or after the use of thymol?

(4) What was the degree or type of anaemia (percentage of haemoglobin, if noted)?

(5) What treatment do you use—(1) for removing the worm, (2) for the anaemia?

ADDITIONAL REMARKS.

N.B.—Replies to be addressed to Editor, *The Indian Medical Gazette*, C/o Messrs. Thacker, Spink & Co., Calcutta.

SIGNED

NAME _____

QUALIFICATION _____

RESIDENCE _____

DATE _____

Current Topics.

THE COLLECTIVE INQUIRY ON ANCHYLOSTOMA IN INDIA

WE wish to direct the special attention of our readers this month to the list of questions which we issue as an extra supplement in this number. We have been asked by more than one of our readers to start such an inquiry. All are aware of the importance now attached in many countries to the pathological effects of the ancylostoma parasite. The pages of this Gazette during the past ten years have contained many discussions on the harmfulness or the reverse of this parasite. In all the text-books on tropical disease full accounts are given of its ravages in many countries "from China to Peru." Assam has in particular been a battle-ground for the two parties, those who uphold and those who deny the harmful rôle of the worm. The work of Giles, Dobson, Rogers, and many other medical men in Assam have taught us how extremely prevalent the worm is in that province, but among these writers there is, as we all know, the very greatest divergence of opinion as to whether the worm is to be credited or not with a large share in the production of the disease which has devastated parts of Assam, known as *kala-azar*. The ill-effects attributed to the worm in the island of Ceylon are also well known to our readers from the writings in our columns of the late Dr. Hayman Thornhill. Captain Williams, I.M.S., and others in Madras have written about its prevalence in that Presidency,—a few writers have referred to its prevalence in some districts in the North-West Provinces and Oudh. On the other hand, we can find little or nothing on record as to the worm in Bombay or in the Punjab; in Bengal too, little notice has been taken of it. We know from reports of Major T. Macdonald, I.M.S., that a very large proportion of the inhabitants of the district of Saran (Chapra) in Bengal harbour this parasite, we have ourselves found it, but only to a small extent, in the intestines of inhabitants of Bhagalpur District. In Hazaribagh we have heard of it, but this exhausts, as far as we have been able to ascertain, our knowledge of it in Bengal, although the work of Dobson at Dhubri has shown the existence of it in coolies, examined at Dhubri, who had just arrived from many different districts in that province.

What we now propose is that, as this Gazette circulates in every district in India and Burma, our readers should fill up, as far as they can, the enclosed list of questions, so that we may be able to find out in what districts the parasite is present or not. Even negative evidence is important, so that if any reader can say that

he has searched for and never found the worm in any district, by all means, let him say so. Those who have paid attention to the subject will no doubt be able to fill up the list of questions fully. The possible connection between this worm and the prevalence of so-called "scorbutic" or spongy gums, which we know has been raised in Akola, is another point of great interest on which we hope for further information and light.

For help in drawing up this list of questions we must express our thanks to Captain L. Rogers, I.M.S.; Captain Williams, I.M.S.; and Captain Farnside, I.M.S. As will be seen by our London Letter this month, another reason exists for special attention being paid to this question at present in that the question of ancylostomiasis has been put down as one of the special subjects for discussion at the Tropical Section of the next British Medical Association Meeting at Ipswich in July next, under the presidency of Professor Kenneth McLeod, of Netley.

THE TROPICAL SECTION AT THE NEXT BRITISH MEDICAL ASSOCIATION MEETING.

WE have much pleasure in directing attention to our London Letter this month, in which Dr. Kenneth McLeod gives a detailed description of the programme arranged by him for the discussions at the Tropical Section of the next Meeting of the British Medical Association in the end of July next. All medical men in India, and our readers in particular, should be specially interested in making this meeting a great success. Professor K. McLeod is well known to all of us, and he was for many years the Editor of this Gazette, and still shows his great interest in it, and in medical matters in India, by sparing the time to write every month the interesting London Letters which have been for many years a feature of our columns. But the Tropical Section this year has still further claims on the aid and good wishes of the medical services in India. The two Vice-Presidents of the Section are also distinguished Indian Medical Service officers, *viz.*, Major Ronald Ross, whose work on mosquito malaria has reflected credit on the service all over the world; Lieutenant-Colonel Oswald Baker, I.M.S. (retd.), is a name also well known in India, where he held the important posts of Civil Surgeon of Simla and for many years of Rangoon. The subjects are moreover very well chosen, and such as much interest us in India. They are the use of quinine in malaria and its so-called prophylactic use. The next subject is yaws, a disease which has been several times of late discussed in these columns. It is especially common in Assam and Burma, and in Ceylon it is known under the name "parangi." The next subject for debate is ancylostomiasis, which we refer to fully in another column.

We, therefore, appeal to our readers to send contributions to this section, which may be addressed either to the sectional secretaries, or to Professor McLeod at Netley.

LEPROSY IN MADRAS.

SOME months ago we commented upon the very interesting professional reports which are contained in the Triennial Report on the Medical Institutions of the Presidency Town of Madras. We now purpose to briefly notice the report by Lieutenant-Colonel Lee, I.M.S., on the working of the Government Leper Asylum in that city. Lieutenant-Colonel Lee gives a very interesting account of some recent additions to our knowledge of the etiology, pathology and treatment of leprosy. He concludes his remarks with the following words:—"The Government Leper Asylum, Madras, is as yet unequipped with any of the modern instruments or apparatus required for the pursuit of work of this kind; hence the large field it offers for such enquiries is still a fallow one, and its wealth of clinical material remains unutilised." This not very satisfactory state of affairs will, we hope, not much longer be permitted.

Lieutenant-Colonel Lee commences his account by giving a short historical sketch of this disease, which Mr. Jonathan Hutchinson has called an "aristocrat of diseases." He summarises as follows the conclusions of the Leprosy Congress of 1897:—

1. The bacillus *lepræ* (Hansen) is the true cause of the disease, climate, personal habits, food, &c., being only of secondary importance.

2. Man is the only animal in which the bacillus exists.

3. Leprosy is a contagious but not a hereditary disease, and there is an increased risk of infection among populations living under unfavourable conditions.

4. Attempts to cure leprosy have failed, and the isolation of lepers is necessary when the disease has become prevalent.

On this Colonel Lee comments as follows:—"In this country where lepers abound, harsh measures of isolation and segregation must fail, because lepers would be concealed by their relatives and friends; just as happened in South Africa, where an attempt to segregate all lepers on Robben's Island has proved a failure for the same reason." The surveillance of lepers, coupled with measures to protect their families and the public would suffice in the case of the better classes, asylum treatment being reserved only for vagrants and beggars. Recent researches tend to show that the mouth and nasal cavities are the avenues for the entrance of the disease, and constitute its primary seat. Sticker of Giessen has found the bacillus of leprosy in the nasal secretions of 122 out of 153 lepers in India and believes in the direct and indirect

transference of the bacilli from the sick to the healthy. Colonel Lee also notices the views of Dr. Impey (see *Indian Medical Gazette*, p. 468 of 1897) who maintained that the purely anaesthetic cases were not contagious, and if this is confirmed, it will at once simplify the problem of segregation as it will only be necessary to segregate the tubercular cases, who are much fewer in number than the anaesthetic ones. Colonel Lee concludes his very interesting essay with tables from the books of the Madras Leper Asylum. While there were 40 Europeans who passed through the Asylum in the year there were 533 natives; of the latter there were 242 tubercular cases as against 291 of the anaesthetic type. Out of a total of 573 cases a family taint was confessed in 174, or about 30 per cent. There were no cases in which a family taint could be traced through more than one generation. There were nine European and 28 native cases where the parents were healthy but the children were lepers. In the case of 65 native patients born of leprous parents there were 283 brothers and sisters, and of these 39 were also affected. Another table shows the fertility of leprous couples, there were 48 children for the 10 couples or nearly 5 children each. In fact leprosy has, we might say unfortunately, no effect in lessening fertility, as will be seen from the following figures:—Out of 148 couples in which the husband is a leper and the wife healthy only one couple was sterile, and the rest between them had 495 children; also out of 43 couples where the wife was a leper and the husband healthy only one was sterile, and the rest had an average of five children apiece.

We would like to see statistics of a similar nature compiled for other leper asylums in India.

A BRITISH MEDICAL JOURNAL TROPICAL NUMBER.

THE issue of the *British Medical Journal* for February 10th is exceptionally interesting to us dwellers in the tropics, as it contains such a lot of articles of importance to us. As very many of our readers receive that journal for themselves, it is not necessary for us to enumerate its contents, but we must confine ourselves to making some comments on the important articles by Professor Celli and by Koch on the question of mosquito malaria.

The article by Professor Celli contains a good exposition of the whole question of malaria in the new light thrown on its etiology by the mosquito theory. We can only notice the most important or most debatable points. Professor Celli at once announces that malaria must be ranked among the typically contagious diseases, and shows how the older views of the connection of water and soil can be explained by their influence on the life history of the anopheles. He states that winds do not transport the mos-

quitos, but our readers may remember that in our last issue Captain James, I.M.S., took the opposite view, and suggested that the prevalence of malaria in Travancore in the months of November and December is possibly due to the fact that strong winds prevail in one direction and blow crowds of mosquitos from the marshy swamps to the windward of that district. Another interesting point is noted by Celli, that the anopheles does not make the well-known buzzing sound so annoying in the culex. This is an interesting point, and will help to explain those cases where people say that they are never bitten by mosquitos, yet they have often got fever. Of course they are often bitten while asleep also. We note that Celli considers that the chilling of the body predisposes both to the primary infection and to relapses, which are after all, we suppose, the most frequent form of malarial fever.

He also points out that no artificial immunity against malaria can be produced, except by the use of drugs, among which he mentions eucinchin (the new tasteless substitute for quinine) and methylene-blue. The latter drug is one that has been much praised in malaria by German writers for some years past, we are not aware if any experiments have been made with it in India. The only drawback we know against its use is a liability to produce a form of cystitis.

It may also be noted that Celli mentions rice-fields as notable places for the harbouring of the anopheles, a fact which agrees with popular views in India in regard to the danger of rice-fields, and is exactly what was pointed out in our columns by Captain James, I.M.S., some months ago. It is also to be noted that the new view does not agree with the old as to arboriculture, and even the planting of eucalyptus trees, from which so much was hoped twenty years ago, is condemned as worse than useless. We also learn that the railways of Italy are "fomites of malaria" in so far as they obstruct the drainage and alter the hydraulic conditions of any district.

As regards prevention of malaria, Celli has much to say; like all the Continental writers he lays great stress on the treatment of the individual patient, so as to destroy in his blood one certain source of the parasite. He, therefore, looks upon the malarial fever case as contagious and applies to him the ordinary rules of hygiene, hence he is to be regarded in the same way as a scarlet fever or a small-pox patient, that is as a danger to the community. For the destruction of the mosquito, which is the vehicle of the fever, he recommends powdered chrysanthemums, and an aniline dye, which he calls "larvicide," which may be gallol, the same as the gallol mentioned by him in a former lecture. It is doubtful if the powdered mixture called by Celli "zanzolin" will be much superior to many well-known, much advertised, but seldom used, powders or incenses familiar in this country.

Professor Koch's second report of his malaria investigation is also interesting. It is noted that there has been a great improvement in the healthiness of Batavia, but though this has coincided with an improved water-supply, yet the water is not given the credit, apparently because such an explanation does not harmonise with the latest views on mosquito malaria. It is quaint to find Koch whose views of a year ago on the dangers of quinine created much consternation, now strongly advocates what we have for years practised in India, viz., the popularisation of quinine by even a gratuitous distribution. It is also shown that malaria cannot be experimentally transmitted to apes, "man therefore remains the only bearer of the parasite." Koch also gives a description of the danger of rice-fields, irrigation of the fields he calls "artificial marsh-making." He also shows that children are specially susceptible to malaria. In a place called Tosari no mosquitos are to be found (we wonder why), and here Koch found no malaria except in a few cases which could be clearly traced to importation. He lays down the doctrine "where there are no mosquitos there is no endemic malaria." He also states that he found no less than five varieties of the anopheles. "In any case," he writes, "the proposal recently made to destroy the anopheles in Java will meet with insuperable difficulties."

We have not space to refer to many other interesting and valuable articles in this issue of our contemporary, but we can commend the whole number to the attention of our readers.

KERNIG'S SYMPTOM IN MENINGITIS.

Now that after fourteen years' obscurity the phenomenon known as Kernig's symptom is becoming generally recognised, we find that the truth of Kernig's observation is being established, but at the same time it may turn out not to have the very special significance that was at first attributed to it. It appears that it will turn out to be significant of more than meningitis, for instance Mr. A. Powell, of Cachar, recently told us of having found the symptom present in three cases of what he diagnosed by the microscope to be malarial coma, and in December last at a Paris Medical Society Widal related the case of a meningeal haemorrhage in which the symptoms were obscure and misleading, in which Kernig's phenomenon was noted and it led to attention being directed to the meninges.

In a case of cerebro-spinal fever recently under our care, we found, in addition to well marked Kernig's symptom in the legs, a somewhat similar condition of strong contracture of the muscles of the both arms.

We are informed that there has recently been a very severe outbreak of cerebro-spinal fever in the jail at Raipur, there have been thirteen cases, nearly all of which have been fatal. We

hope to publish an account of these cases by Captain Henvey, I.M.S., shortly.

THE PREVENTION OF MALARIAL FEVER.

THE Liverpool School of Tropical Medicine has issued a short memoir or pamphlet entitled "Instructions for the Prevention of Malarial Fever." The little book is intended for the use and instruction of residents in malarial countries, and is simply and clearly written so that the ordinary layman can read and understand it. It contains, however, in small compass a wonderfully complete account of the mosquito malarial theory. After a few preliminary remarks on the nature of the disease and how the parasites live we have a clear description of "How we get Malarial Fever." It is shown that malarial fever like all other parasitic diseases is a "catching disease," that it is communicable from the sick to the healthy by the agency of the mosquito. It also disposes of the objection sometimes urged that fever attacks occur without the patient being bitten by the mosquito by pointing out that the mosquito is only the agent in first or in fresh attacks. "A person once attacked may suffer from attacks of fever relapses, which have nothing to do with mosquitos." Other stock objections are also disposed of satisfactorily. It is written that not a single instance of malaria occurring where there are no mosquitos has yet been recorded after sufficient investigation. It is also pointed out to those who say that they have got fever without being bitten that one can be bitten without knowing it especially during sleep. It is also shown that the cases where malarial fevers are supposed to have been acquired in uninhabited islands may very well have been relapses or at least it would be very difficult for such persons to prove that they have never in the course of their journey to these happy and perhaps mythical isles been exposed to the bite of a mosquito. The little book then goes on to show what is known of the habits of the anopheles and how to distinguish the anopheles from the culex. The differences between the mosquitos (culex and anopheles) are clearly laid down and how they are to be recognised both in their adult and in their larval stages.

We note that Major Ross (who may be presumed to be the writer) admits that the anopheles may be found in rice-fields, a point we have referred to above. The following remarks are worth quoting: "To find anopheles we must go farther afield. Small pools on the ground containing green waterweed, especially rain-water puddles by the side of roads and paths, are their favourite haunts, but they may also be found in puddles on the surface of roads, or in hollows in rocks, in old wells, in drains, in small ponds and rice-fields, or even in sloppy ground amongst grass or round stable

and cattle byres. To find them we must simply go to look for them." Again we may quote— "But while small collections of water can easily be emptied or brushed away it is more difficult, perhaps sometimes impossible, to deal with the larger collections of water in which mosquitos, especially the dangerous ones breed. In such cases we must fill up or drain away all useless collections of water if such can be done at reasonable cost. If this cannot be done recourse must be had to the habitual use of culicides, such as oil, tar, quicklime, etc., but the ideal culicide has yet to be discovered."

Enough has been quoted to show the practical nature of this little book which can be strongly recommended to those of our readers who may have the task before them of persuading Municipal Committees and such like of the necessity of doing something to mitigate at least the ravages of malaria. Indeed we would like to see the pamphlet translated into the vernacular languages of India.

While we are on the subject, we may call attention to the interesting article on the prevention of blackwater fever, by Dr. W. H. Crosse, Consulting Medical Officer of the Niger Company. His view is that this fatal form of fever is only a peculiar form of malaria, in fact that blackwater fever bears the same relation to malarial fever which hyperpyrexia bears to acute rheumatic fever. To destroy the mosquito breeding pools and puddles in Nigeria would be, as he says, "an hopeless task." The country is a perfect network of creeks, streams and puddles, and for hundreds of miles the land is only slightly raised above the high water level, so that practically drainage is out of the question. "It seems to me therefore that the only way in which we can hope to stamp out the mosquito is by introducing into the country which it inhabits some animal which is inimical to it." He then quotes a statement that in the Western States of America and in Canada there is a red parasite which destroys mosquitos and almost exterminates them about the middle or end of July. This parasite is well known in Washington State and in Ontario. Our readers will remember that Lieut.-Colonel O'Connell, R.A.M.C., has called attention to other natural enemies of the mosquito, *viz.*, the minnow and the lizard, and in this issue we publish a note by Captain Fearnside, I.M.S., on a dipterous fly and a tick which are parasitic on mosquitos. We really so far know so comparatively little about the life habits of mosquitos that it is by no means impossible that further study of them may lead to some means of destroying them easier than any hitherto advanced. It should not be forgotten, as pointed out in our correspondence columns last month, that the culex and probably other genera are antagonistic to the anopheles. It is easy enough to see difficulties, but it is no little achievement for those who have preached the

mosquito origin of malaria that nowadays we are actually engaged in attempting to tackle the task of prevention. A few years ago any one who seriously discussed the extirpation of malaria, except in the vaguest way, would have been looked upon a harmless enthusiast, or worse.

THE tepid bath treatment of typhoid

The *Australasian Medical Gazette*, January 20th, contains an interesting article by Dr. E. Hirschfeld, of the Brisbane Hospital, on the subject of the treatment of typhoid fever by means of tepid baths. All the world knows that it was in the wards of the Brisbane Hospital that Dr. F. E. Hare obtained his epoch-making results in the treatment of this disease by the use of cold-water bathing. Now his colleague presents us with a series of even better results from the use of tepid baths. In three years there were 543 cases treated by baths, in 1897 there were 266 cases bathed at the ordinary temperature of the water, with a death-rate of 7·9 per cent. In 1898 for part of the year tepid baths were substituted and the death-rate was 7·5, in 1899 tepid baths were exclusively employed and the death-rate of 120 cases works out at only 4·2. The main features of the treatment are as follows:—A purgative of calomel or jalap is usually given to patients admitted in the first week, or where there is meteorism, castor oil with 15m. of turpentine. The temperature is taken every three hours in the rectum, and when it is 102° by day or 104° by night a bath is given. The bath lasts for twenty minutes, at a temperature of 85°F. Half an hour after the temperature is taken to control the effects of the bath. The average reduction of the body temperature is about 1·5 or 2°. At the same time Burney Yeo's chlorine mixture is given, for which at the beginning of the third week salicylate of bismuth is substituted, as it has been found that this drug forms a sort of film over the ulcers. Dr. Hirschfeld thus sums up his reasons for preferring the tepid baths (1) patients dread the tepid bath less; (2) tepid bathing is much less frequently followed by shivering; (3) the tepid bath alone is admissible when the heart is weak, and not able to support severe refrigeration.

PERNICIOUS ANÆMIA.

Dr. WILLIAM HUNTER, of Charing Cross Hospital, has had a very valuable series of articles on Pernicious Anæmia running through the *Lancet* recently. He believes that it is a chronic infective disease and has formulated the following conclusions:—

(1) Pernicious anæmia is a special form of chronic blood poisoning—a toxæmia. (2) It is the result of a special infection of the digestive tract, especially of the mouth and stomach and probably, although to a less degree, of the intestine. (3) The chief source of the infection

is through the mouth, from long continued and neglected cario-necrotic conditions of teeth and sometimes possibly from stomatitis arising from other causes. (4) The usual effect of this infection is a chronic infective catarrh of the mouth and stomach which may in time lead to deeper seated changes, e.g., ulcers of the mouth and tongue, chronic glossitis and atrophic changes in the tongue, and chronic gastritis with atrophy of gastric glands. (5) Evidences of the infectivity of the organisms of dental decay are overwhelming, and in suitable cases the infective nature of the resulting catarrh of stomach can also be demonstrated. (6) The infection is chiefly streptococcal and probably derives its special characters from being of a "mixed" character. (7) Such infection the more readily occurs if the stomach or intestine is already from any cause the seat of disease. (8) The gastric and intestinal irritation (sickness, retching, vomiting, looseness of bowels, and diarrhoea) so often noticed, and which I find to be even more common than is stated (being recorded in close on 80 per cent. of cases) is the local effect of this infective catarrh, while the excessive destruction of blood taking place in the portal area is the result of the action of the poisons in the blood. (9) The fever so commonly met with is not an accidental occurrence, the effect of weakness, but is a feature of the disease, a result of the infective process itself, and its variations correspond to variations in the activity of that process. (10) Such variations are common—from week to week, sometimes from day to day, in the progress of the disease, even when it is running a fairly progressive course. (11) In addition, however, the course of the disease towards the fatal termination is often marked by one—sometimes by two—periods of marked improvement, lasting, it may be, many months or a year or more, followed by relapses. This character of the disease I have come to regard as the result of a relative immunity, unfortunately only temporary in its nature, conferred by the disease itself—an immunity accelerated and greatly strengthened for a time by suitable medicinal treatment, notably by administration of arsenic. (12) The above conclusions suggest certain new considerations in regard to treatment, of which the chief are: (a) minute attention to the hygiene of the mouth and especially of the teeth, with the immediate removal of every source of infection there; (b) stricter antiseptic treatment of the stomach and intestine; and (c) antitoxic serum treatment with the view of antagonising within the blood itself the poisons absorbed into it.

ROSS'S CLASSIFICATION OF HUMAN AND AVIAN PARASITES.

THE following classification of the various avian and human malarial parasites, drawn up

by Major Ross, is given by Manson in his appendix on Malaria in the 8th volume of Allbutt's System of Medicine.

Family: *Hæmamœbidæ* (Wasielewski).

GENUS 1.—*Hæmamœba*, Grassi and Feletti. (*The mature gametocytes are similar in form to the mature sporocytes before the spores have been differentiated.*)

SPECIES 1.—*Hæmamœba Dunilevskii*, Syn. *Laveranii*, *Danilevskii*. *Halteridium Danileskii*, Lubbe, etc. Several varieties, possibly distinct species. Parasites of pigeons, jays, crows, etc.

SPECIES 2.—*Hæmamœba relicta*, Syn. *H. præcox*, *H. subimmuculata*, or the *protozoa Grasii*, of Labbe. (Parasite of sparrows and larks.)

SPECIES 3.—*Hæmamœba Malariae* (Grassi). Syn. *H. Laverani*. (Parasite of quartan fever in man.)

SPECIES 4.—*Hæmamœba vivax* (Grassi). Syn. *H. Laverani* (Labbe). The parasite of tertian fever in man.

GENUS 2.—*Haemomenas*, Syn. *Laverania*. (The gametocytes have a special crescentic form.)

SPECIES. *Haemomenas præcox* (Grassi). Syn. *Hæmamœba præcox*. (Several varieties possibly distinct species.) Parasite of irregular, remittent, pernicious, or aestivo-autumnal fever of man.

DR. W. B. COLEY, whose name is so well known in connection with the treatment of cases of inoperable cancer by the mixed toxins of erysipelas and bacillus prodigiosus, recently read another paper in New York on the results of this method up to date. He said that the cases now amounted in all to 159. Of eighty-seven cases of round-celled sarcoma thirty-nine showed more or less improvement, and in one instance the patient remained entirely well at the expiration of five years. Twenty-two of these cases were of the spindle-celled variety of sarcoma. Of these eight remained well at the end of from three to seven years, and eleven at the expiration of from one to three years. He concluded that "mixed toxins exert an inhibitory action on malignant growths; that they are less efficient in their action on carcinoma than on sarcoma, that in the larger proportion of inoperable cases sarcoma patients survived for more than three years after the treatment, and that the action of the toxins in no way resembled that of an escharotic."

For a case of inoperable cancer to survive three years is no mean good result.

THE January and February numbers of the *Practitioner* contain a series of valuable articles on Pneumonia. Pneumonia is, says Sir Samuel West, the most important malady to which the human body is liable. It may be noted that all the eminent writers agree in regarding pneumonia, not as a local disease of the lungs,

but as a general fever with local manifestations in the lungs, and that the *vera causa* is a microbe (which microbe it is not agreed), and that cold only acts as a predisposing cause. It is also noteworthy that while Sir Samuel Wilks holds that opium is a valuable remedy in this complaint, Sir Herman Weber takes the very opposite view.

It is also remarkable that Dr. Arthur Newsome in his interesting contribution on "Pneumonia from a Public Health point of View" makes no allusion to the numerous cases of contagious pneumonia, which have at times been reported in India, though he does recognise an epidemic form, and suggests that the difference between sporadic and epidemic pneumonia is the same as that between epidemic diarrhoea and cholera or between febrile catarrh and influenza.

How long will writers in England continue to look upon diseases from their own insular point of view?

WE are glad to see that Colonel T. H. Hendley, C.I.E., I.M.S., is pressing the question of the teaching of Hygiene on the authorities of Calcutta University. To inoculate the educated classes of the Native community with sound ideas of even elementary hygiene is a great step in the right direction, and in the future may well produce good fruit.

THE *Edinburgh Medical Journal* (new series) is becoming a first class medical paper. It is well got up and ably edited. The January issue contains one, to us, very interesting article on Dysentery in Fiji by Dr. C. T. W. Hirsch, from which it appears that the types of dysentery met in those Islands is very similar to dysentery in Indian Jails and Hospitals. The February number also contains an excellent lecture, on Sprue by Sir T. Lauder Brunton, which is well worth reading.

THE *Dublin Journal of Medical Science* contains (February) an interesting article on "Tropical Diarrhoea" by Surgeon-General A. Gore, late P. M. O., H. M.'s Forces in India. We have also to acknowledge Treatment for past two months. We hope to notice this excellent fortnightly in a later issue.

WE have much pleasure in calling attention to this recently formed Fund to supply certain necessaries and comforts to the Officers and Men of the Royal Army Medical Corps now serving in South Africa. A very strong Central Committee has been formed, and is supported by the wives of all the leading men in the medical profession in London. Surgeon-General Muir,

who presided at the inaugural meeting, stated that the Indian doolie-bearers, who accompanied the Indian Contingent to Africa will also share in the benefits of the Fund. It has been suggested that every member of the profession should subscribe the humble sum of half a crown, although larger sums will of course be received.

It is a worthy object, the readers of the home papers nowadays know how all the regiments at the front have had such Funds got up for them by friends and sympathisers, and a Corps, which has the whole medical profession of the British Empire to take an interest in it, should at least be as well off as regards such a Fund as the most favoured regiment in Her Majesty's Service.

Subscriptions may be sent, either through the *Lancet* or *British Medical Journal*, or direct to the Honorary Treasurer of the Fund, Mrs. Charters Symonds, 58, Portland Place, W., London. Cheques, if used, should be crossed "Holt & Co."

CALCUTTA has hitherto proved herself so refractory to plague, that attempts have even been made to account for it. This satisfactory immunity, or whatever it was, is however no longer the fact. At the end of February the daily death returns for plague took a decided turn for the worse, and almost contemporaneously, severe outbreaks of the disease appeared in several districts of the Province, chiefly in the Barh Subdivision of Patna District and in the neighbouring districts. Cases have also occurred in the cantonment town of Dinapur, and in the city of Patna. Captain Clemesha, I.M.S., is in charge of the plague operations in this district. A few imported cases have been caught in Bhagalpur. They have been promptly isolated. A few imported cases are also reported from several other districts in Bengal.

Reviews.

Rhinoplastic Operations.—By D.F. KEEGAN, M.D., F.R.C.S. London : BAILLIÈRE, TINDALL and COX. Price 5s.

INFIDELITY among the women of India has, from very remote ages, been punished with a form of mutilation calculated to mar their beauty. By cutting off a wife's nose the outraged husband destroys her attractions in the eyes of the Lothario through whose vicious attentions she has been led astray. The shame was generally further enhanced by the permanence of the disfigurement; for, although we hear of rhinoplastic operations performed by native surgeons, the secluded women of India could not often avail themselves of such aid. Cutting off the nose was also a form of judicial punishment in Nepaul and other Native States

until fairly recent times. Nor does this unfortunately exhausts the sources of injury to the nose. The skill of the surgeon may be called for to remedy defects produced by accident or as the result of syphilitic or other ulceration. Defects following ulceration are perhaps of all forms the most difficult to deal with. Then, too, from a side more artistic than absolutely necessary, there is plenty of scope for surgical ingenuity in remedying deformities. These may be due to distortion of the septum, contracted nares, excessive arching, absence of nasal bridge, and unsightly pendulous growth generally of a lipomatous nature. As regards frail woman the hypercritical might accuse the surgeon of assisting immorality when, by his skill, he removes the traces of her punishment and restores the nose by a rhinoplastic operation. However, that side of the question concerns us little or not at all! Plastic operations are distinctly among the triumphs of surgery, and Dr. Keegan's handsome little book gives in the clearest manner an able and instructive account of progress made and of the methods now in vogue. The historical letter reproduced on page 16 teaches us that rhinoplastic operations were successfully performed by native surgeons who appear to have been more skilful at the close of the eighteenth century than they are now; since we do not hear of such work being done nowadays, except by natives qualified from the medical schools of India. The area of rhinoplastic work has been extended since the arrival of European lady surgeons in India bringing aid to women of a class which formerly received no help, as such women could not apply to male surgeon. There has been, however, and still is, plenty of work among the women of the lower classes, and nearly every civil surgeon will come across a few cases requiring operation during his service. Dr. Keegan discusses briefly the Italian, or Talicottian method, the French method and the Indian method of performing rhinoplastic operations, and decides, we think rightly, in favour of the Indian method, especially on the lines followed in his operation. It would not be fair to the author to give full details of methods that have proved so successful in his hands; but to those who secure his book we can promise interesting reading as well as clear and concise guidance. Dr. Keegan records also work done by other surgeons, and shows that not only skin operations but those affecting the shape of the nose, whether overarched or depressed, may be undertaken with every hope of success. In the one case bone and cartilage have been removed, while in the other, a concealed artificial gold bridge has been supplied: see report of Mr. Ellison's operation on page 4. The book is well illustrated, well printed, and in every way well turned out by the publishers. It is also cheap. In conclusion, we should not omit to notice the generosity of Dr. Keegan in giving

credit to younger surgeons where credit is due, as in the case of the improvements suggested by Captain Smith, I.M.S., now Civil Surgeon of Jallandar.

The Scientific Valuation of Alcohol in Health.—By Captain P. W. O'GORMAN, I.M.S., M.D. (Brux.), D.P.H. (Camb.). Edinburgh: W. F. CLAY, 1900.

CAPTAIN O'GORMAN, I.M.S., is well known as an ardent disciple of total abstinence. The present little volume is a revised copy of a lecture he delivered while on furlough in England before the British Temperance Association. It contains an interesting preface by Dr. G. Sims Woodhead, the Professor of Pathology in Cambridge, who is also a prominent supporter of the temperance party.

The little volume gives evidence of a very thorough acquaintance with the literature of the temperance question and with the most recent views of physiologists on the value of alcohol as a food. As medical men we are all aware of the great evil effects which are rightly attributed to the abuse of alcohol, but it is on the question of use or abuse that most men join issue with the ardent propagandists of teetotalism. The question of the use of alcohol cannot fairly be considered apart from the similar euphoric drugs, used by many nations, and when used in moderation attended with little harm.

None of our readers are so ignorant of physiology as to believe that alcohol is of any use to "keep out the cold," nor do they believe that it is of any practical value in health as a food. When medical men use alcohol themselves it is because they find it pleasant, and that in moderation it does them no harm. Medical men well know the fallacy of the common belief that alcohol is "necessary in a hot climate," in fact, here we quite agree with our author that the less of it that is used in a climate like India, the better. As a matter of fact, the present generation of Englishmen in India is remarkably temperate, and we have little doubt that to this fact must be attributed much of the good health enjoyed by the present-day Englishman in India.

We have not attempted to discuss the scientific arguments used by Captain O'Gorman, we admit their truth, they are practically admitted by every medical man, and we can recommend the book to any of our readers who has a lay friend or patient to convert, he will here find a full exposition of the present views of physiologists on the value of alcohol in health.

The Western Rajputana States. A Medico-topographical and General Account of Marwar, Sirohi and Jaisalmer. By Lieut.-Colonel A. ADAMS, I.M.S., M.D., F.R.C.S.I. London: JUNIOR ARMY AND NAVY STORES, 1899.

THIS very handsome and interesting volume by Lieutenant-Colonel A. Adams, I.M.S., the

Administrative Medical Officer in Rajputana, is not only a valuable medico-topographical account of a very interesting part of India, but it also gives a brief historical sketch of the country and its long line of Native Chiefs. Lieutenant-Colonel Adams has worked among the peoples of Rajputana for no less than eighteen years, and consequently is peculiarly well qualified to write about them.

A glance at the table of contents will show the wide extent of subjects described in this volume. First, we have general descriptions of the three States, and short histories of them. The chief towns are then described, and in many cases beautiful photographs of the chief public buildings and palaces are given. Then we have a chapter on the religion of the country and on popular superstitions and omens. There is also a short account of the Imperial Service Troops.

Part 2 is devoted to an account of the state of public instruction and to the sanitary conditions of the States, as regards water-supply, drainage, roads, railways, &c. Part 3 gives descriptions of the principal fairs, a history of previous famines, &c. In Part 4 we find descriptions of the food supplies of the people, and an account, in considerable detail, of the large and small game and the fishes of the States. Part 5 is of especial medical interest, as it is concerned with the health and diseases of the people, with medical aid, vaccination and very elaborate and complete meteorological tables for many years past. The last part gives a very complete account of the fauna and flora of the country, birds, insects, locusts, &c.

It will be seen that Lieutenant-Colonel Adams has spared no amount of pains to make his book valuable and accurate, as well as interesting to a large variety of readers.

We must, however, confine ourselves to quoting from the chapters dealing with the medical and surgical diseases and with public health. Full statistical tables are given from the State hospitals of all the medical and surgical diseases treated during the last decade. The figures given for small-pox are an admirable object-lesson in the value of vaccination,—a brief history too is given of the behaviour of cholera in the States for many years past. The ravages of influenza and of dysentery are touched upon, and an interesting chapter is devoted to malaria from the point of view of the mosquito theory. Lieutenant-Colonel Adams gives it as his opinion that "most of the children of the country get over typhoid in their childhood." Tuberculous disease of the lungs are not common, but there is an infectious form of pneumonia, often complicated with malarial fever, which is often fatal in the cold weather. Liver abscess is very rare, though dysentery is far from uncommon. There is a very interesting résumé of the history of plague in Rajputana, since the historic epidemic

of 1886 in Pali, which was said to have been introduced in silks imported from China. The epidemic spread rapidly and attacked all the principal towns of Marwar. Rats died in great numbers during the outbreak. Fortunately these States have suffered less in the present outbreak, and in most cases, owing to the people promptly evacuating their houses, the suppression of the epidemic was not difficult. Much credit is given in this volume to the good plague work of Captain J. W. Grant, I.M.S., to whose untiring zeal and management this result is in great part to be attributed. We have but little space to devote to the surgical diseases of these States. Cataract is very common and also stone, the latter disease being attributed to the cold and the use of millet, as the staple food. We note that mycetoma is a very common disease of these sandy deserts, especially among people connected with cattle. We have done enough to show that this volume is both useful and very interesting. It is copiously illustrated, and the thanks of readers are due to the enlightened Durbar of Marwar for the great expense incurred in the preparation of the work. We congratulate Lieutenant-Colonel Adams on the production of the book, which must remain as a monument of his many years work in and for these States.

Scientific Memoirs by Medical Officers of the Army of India.—Edited by Surgeon-General ROBERT HARVEY, M.D., C.B., LL.D., I.M.S.

PART XI of these memoirs, which appeared near the end of 1899, contains three papers of great interest written by Medical Officers of the Indian Medical Service who have chosen the bypaths of medical science; and each in his own line may be regarded as an expert. It is seldom that the hard-worked officers in civil or military employ have time for original research outside the beaten track, so that it is only the few that can contribute papers of scientific interest to these memoirs. The first article is by Brigade-Surgeon-Lieutenant-Colonel D. D. Cunningham, C.I.E., F.R.S., and deals with *The Physiological action of Cobra Venom*. It commences with evidence to support the view previously set forth in Part IX, that the phenomena of cobra venom intoxication are dependent on effects produced on the nervous apparatus by "primarily induced changes in the blood." The phenomena present in specimens of fowls' blood pure or mixed with water were briefly—"rapid and firm coagulation; conspicuous contraction of the clot; prolonged retention of a vivid scarlet tint by the surface, and of a plum-coloured one by the substance of the mass; prolonged preservation of the bodies of the erythrocytes; and finally absence of any appreciable reduction in the respiratory capacity of the haemoglobin, until very conspicuous evidences of advanced putrefactive decomposition had made their appearance." As compared with the above experiments

with fowls' blood treated with various quantities of cobra venom gave a very different series of phenomena, viz., "delay, or more or less complete suppression of coagulation; absence of contraction of clot; very rapid darkening of colour, so that the substance of the specimen soon appears black and the surface of a very deep lake tint; very rapid solution of the bodies of the erythrocytes, and consequent liberation of nuclei where such bodies are present, and the occurrence of various degrees of reduction in the respiratory property of the haemoglobin quite unconnected with putrefactive changes."

The solvent action of cobra venom in mammalian blood is just as energetic as it is in birds.

These various phenomena are treated at length both in their effects on the blood of birds and reptiles. Birds are said to be more susceptible than reptiles to cobrine intoxication. The author compares cobrine intoxication with that produced by viperine venom, and concludes that the former is essentially determined by primary haematic changes, while the latter indicates acute nervous irritation and exhaustion. To Dr. Cunningham's paper is added a note by the late Professor Kanthack containing further results of experiments with cobra venom on blood.

The second article is from the pen of Major David Prain, Superintendent of the Royal Botanic Gardens at Sibpur. He describes three new genera of plants from the Kachin Hills. These plants were among collections sent in by Captain Pottinger, R.A., and Lieutenant Cruddas, s.c. The first two genera are therefore called *Cruddasia* and *Pottengeria*, and to the third the writer has given the name *Eurysolea*. They belong respectively to the Natural orders: *Leguminosae*, *Saxifragaceae* and *Labiatae*.

The rest of the memoirs is taken up with a valuable list of contributions to Deep Sea Zoological work carried out by the naturalists on board the Royal Indian Marine Survey Ship *Investigator* from 1884 to 1897. Major Alcock, I.M.S., has arranged his material in five sections. In the *Introductory* section Major Alcock pays a well-deserved tribute to the late Surgeon-Major G. C. Wallich, who, as the naturalist with Sir Leopold McClintock's North Atlantic Expedition of 1860, first proved that the ocean depths, below 1,000 fathoms, were actually inhabited. Sections 2, 3 and 4 are interesting reading, and contain a short history of the origin and development of marine surveying in India, and the evolution of the naturalist's work which accompanied it; an account of the deep-sea apparatus in use on board the *Investigator*, and an outline of the topography of the Indian seas. Section 5 contains the systematic summary of the zoological work. We cannot here enter in details, but those interested in Zoological work will not find it dry reading, and will be gratified to learn what good work the naturalists on the *Investigator* have done.

The X-ray Case Book, etc., with full diagrams of the Human Body.—By DAVID WALSH, M.D. BAILLIERE, TINDALL and Cox, London. Price for 50 cases. 2s.

It is not necessary to say much concerning this contribution to the surroundings of X-ray work. For recording cases it will be found all that is required. It has also the merit of cheapness, though some would, no doubt, prefer to pay more in order to have firm stiff covers to the book, which in its paper binding rolls up in a somewhat awkward way. The errors noted in the skiagrams of the chest will, no doubt, be corrected in a future issue.

Current Literature.

SURGICAL EXTRACTS.

A successful case of Splenectomy for Rupture.—By George Heaton, M.A., M.B., F.R.C.S. (*British Medical Journal*, 19th August 1899).—This case is of great interest to medical men practising in India, where rupture of the spleen is by no means an uncommon accident. The patient was a boy, 9 years of age, who had been run over by a cart. He was taken to hospital in a semi-conscious state. The face was pale and the body generally blanched. Pulse small and rapid, 130, respiration rapid, 30, and shallow. He complained of pain across the umbilicus. There was dulness in the left flank which rapidly increased, shewing signs of free fluid in the abdomen. These conditions pointed to intra-abdominal hemorrhage. On opening the abdomen a mass of clots was found in the splenic region; about $\frac{1}{2}$ of the spleen was still adherent to the gastro-splenic omentum, the rest being completely torn away. Bleeding was furious, and only checked by large pressure forceps on the splenic vessels. The pedicle was ligatured, and as the boy's condition appeared almost hopeless, saline solution was injected into the median basilic vein. After the operation the pulse was 180 and respiration 36. Two days later the boy's condition had improved, but he was very restless and the abdomen became distended. He was much relieved by a large enema. Recovery was slow owing to anaemia, which did not entirely disappear until six months after the operation. The writer shows that, in addition to anaemia from loss of blood, a distinct leucocytosis follows removal of the spleen. This tends to disappear in about six months.

Lecture on the Cerebellum.—B. I. S. Risien Russell, M.D., F.R.C.S. (*The Dublin Journal of Medical Science*, July 1899). We pass over the experimental part of this article to that portion dealing with clinical diagnosis which gives many details, which will be of great value to the practising physician. The principal points in the localization of the seat of a lesion in the cerebellum are:—The *attitude*: This is very striking in a unilateral lesion. The head is inclined to the side of the lesion, so that the ear and shoulder are approximated to each other, added to which there is arching of the spinal column laterally. The head may be rotated on its vertical axis, so that the chin points to the healthy side. These symptoms, though apparently general, are stated to be robbed of some of their value by the fact that they have occurred when the case has been one of cerebral tumour not cerebellar. Perhaps one explanation of this may be that there has been more or less pressure on the superior cerebellar peduncle, but, in other instances, the cerebral growth has been too far removed from this structure to allow of this explanation.

Rotation of the subject about its longitudinal axis a phenomenon observed sometimes after ablation of half the cerebellum in animals is seldom seen as the result of cerebellar disease in man. When present with a right-sided lesion the subject rotates like a screw entering an object, while with a left-sided lesion the mode of rotation is like a screw coming out of an object. General titubation and reeling are commonly met with, but are unreliable symptoms in man, for sometimes the *reeling* is away from the affected side, at others towards it. Where the other signs present point to the one side of the cerebellum as being affected while the reeling suggests that it is the opposite side the author relies on the other signs, disregarding the evidence supplied by the direction of the reeling. Nystagmus which occurs in unilateral lesions of the cerebellum is lateral, and is most marked when a voluntary attempt is made to turn the eyes to the side of the lesion. The eye on the opposite side is further displaced markedly downwards and outwards, i.e., away from the side of the lesion. Inco-ordination is more marked in the limbs on the side of the lesion and, indeed, in some cases is limited to them. There is in addition true *motor paresis* of the limbs on the side of the lesion, though this is only rarely met with in man, owing, no doubt, to the compensation going on hand-in-hand with the slowly produced defects of disease. The superior extremity appears to suffer most in man, the posterior in animals. In both instances it is the limbs on the same side as the lesion that are affected not those of the opposite side as in the case of cerebral lesion. As regards degenerative changes in the spinal cord, although there is no direct path from the cerebellum there is nevertheless an indirect one through Deiter's nucleus. *Rigidity* due to spasm of the muscles on the same side as the lesion, though marked in experimental cases is not particularly noticed the disease in man. In some cases in man both knee-jerks are increased, but that on the side of the lesion is the more exaggerated and remains so long after that of the opposite side has become normal. There are two other symptoms which, if present, are of the greatest possible value in determining the side of the lesion. They are *facial paralysis* of peripheral type and *deafness*; both are on the same side as the tumour. Moreover, as pointed out by Dr. Beevor, these signs indicate that the tumour is in the anterior part of the posterior fossa.

J. H. T. WALSH.

PUBLIC HEALTH.

Public Health.—*The means of spread of enteric fever.*—The occurrence of large outbreaks of enteric fever from contaminated water has to some extent overshadowed in the medical mind the possibility of its occurrence from other sources. In fact, if the question were asked "To what cause are the largest number of cases of enteric fever in this country due?" there is little doubt that most medical practitioners would answer that contaminated water or milk was the active agent at work. It is very doubtful whether this is the fact, though it would be difficult to prove statistically either view. There can be no doubt that other causes of typhoid fever than contaminated water or milk have gradually come to occupy a less important position with the advance of sanitary reform. Quite apart from the reduced extent of their operation, they do not strike the imagination like outbreaks caused by contaminated water or milk, which usually occur on a large scale, and not only so, but the large number of cases are almost simultaneous in their origin. On the other hand, the other causes of enteric fever are on a smaller scale, and usually cause at any given time only a few scattered or even single sporadic cases. Notwithstanding this fact, in the aggregate it remains true that in the majority of sanitary districts most of the cases of enteric fever cannot be traced to infected milk or water, and by a

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process of exclusion, or by a more or less complete chain of circumstantial evidence, are traced to the other causes to be shortly enumerated.

In speaking of water infection, we must not ignore the fact that in addition to the great outbreaks which, like those at Worthing and Maidstone, have struck terror to the public mind, there may be more limited infection of a water-supply. Thus, in several instances, leaky water-mains have become infected from a polluted soil which surrounded them; and it has been shown that infection may occur into leaky water-mains which are at the time running full. There is another method of possible infection of water-supply to which attention has been called by Mr. Shirley Murphy in reports to the London County Council, and which had been suggested at an earlier period by Professor Corfield in a report to the Vestry of St. George, Hanover Square. Mr. Murphy showed by elaborate tables and charts that the notifications of enteric fever in London increased considerably at a time after the occurrence of storms, which would fit in with the interval required by the known period of incubation of this disease. The suggestion was that these storms had washed polluted matter containing the specific infective material of enteric fever into the River Thames above the points of intake of the water companies supplying London with water, and that the filtering processes of these companies were insufficient to purify completely this storm water, which found its way into the service pipes and caused an increase of enteric fever in the metropolis, in the nature of scattered sporadic cases, the contamination not being sufficient in bulk to produce a more serious epidemic. The suggestion is an important one, and it may be a correct explanation of the observed increase of enteric fever after storms, even though a demonstration of this fact is in the nature of things impracticable. It is, however, open to surmise that the increase of enteric fever after such storms is caused by their direct effect on the drains and on the soil and subsoil about individual houses, causing choked drains or driving out specifically contaminated ground air into the houses. The question must be regarded as still *sub judice*. The attention drawn to this aspect of the metropolitan water-supply has probably had its effect in aiding to impress upon the water companies the importance of increased storage of storm water. Filtration of the metropolitan water-supply is on the whole efficiently done. It is important, however, that such filtration should not be our only line of defence; but that it should be preceded by the beneficial action of subsidence in large reservoirs, which removes a very large proportion of the impurities of river water. The water companies are at the present time spending large sums of money on reservoirs, which are valuable not only as reserve of supply, but also by purifying the water, as already indicated.—*Practitioner*.

OBSTETRICS.

Extract of Corpora Lutea as a Medicine.—The Paris correspondent of the *Lancet* for July 15th says, that at the meeting of the Society of Biology, held on June 24th, Monsieur A. Lebreton laid before the Society the results of his researches into treatment by means of extract of the corpus luteum. In an inaugural thesis M. Lebreton had already pointed out that by their histological structure it was evident that the corpora lutea were really ductless glands, and that the benefits of treatment by ovarian extract depended mainly upon the principles contained in the corpora lutea. As a means of experimental verification of his theory he had some capsules made, each containing 0·05 of a centigramme of pure corpus luteum. These he administered to three patients suffering from the following symptoms: flushes of heat, buzzing in the ears, sweats, feelings of "sinking" sometimes going on very nearly to fainting nightmares, breathlessness, palpitations, and digestive troubles—in a word, all the symptoms due to

"ovarian insufficiency." Two capsules *per diem* were given before the principal meals of the day. The drug acted promptly with notable success, and there were no ill effects noticed. M. Lebreton is now pursuing his researches into the therapeutics of the corpus luteum as regards the various troubles of pregnancy—notably vomiting. He has already met with two cases in which the results were conclusive, but reserves publication until he has a larger number of cases upon which to report.

When may a Puerpera leave the Bed?

Charles followed the advice of Küstner, who permits women to leave the bed three days post-partum, claiming that this aids involution. He substantiates Küstner's statement, but remarks that it would not be advisable in general practice, because the women, although out of bed, must abstain from all work and exertion. According to Küstner a woman may leave the bed on the fifth day, not only without harm but often to great advantage. Involution is more perfect, the lochial discharge decreases, and there is no increased danger of prolapse. It facilitates the evacuation of bladder and rectum and diminishes the liability to flatulence. The abdominal walls sooner regain their firmness, and cardiac depression is less marked than after prolonged rest in bed. After abnormal confinements and obstetrical operations the period of rest should be extended. Olshansen emphatically disapproves of Küstner's advice and draws attention to the fact that the wounds which more or less accompany every confinement are apt to reopen. The uterine ligaments at this period have also not undergone sufficient involution, and the woman is more liable to incur uterine displacements. He cannot comprehend that leaving the bed on the fifth day should tend to make the abdominal walls more tense, and believes that the weight of the intestines favours the liability to a pendulous belly. It is also likely to have an unfavorable influence upon the circulation because the dilated veins are likely to remain enlarged. Schatz states that the distended pelvic floor best regains the normal condition by prolonged rest in bed, and can see no reason for permitting the puerpera to leave her bed thus early.—*American Journal of Obstetrics*.

Hydramnion in cases of Uniovial or Homologous Twins.—Dr. Thomas Wilson, in a paper on this subject, pointed out that although twins derived from separate ova are seven times more common than those derived from a single ovum, hydramnion appears to occur nearly as frequently in the latter variety as in the former. His paper was founded on two cases of uniovial or homologous twins which occurred in the writer's practice, and on twenty other cases collected from various sources. The usual history of a case of this kind is that the patient, usually a multipara, for the first few months of a pregnancy goes on normally. Then, usually at the fourth or fifth month and without any assignable cause, rapid enlargement of the abdomen begins acutely, and leads in the course of a few days or weeks to extreme distress by reason of the severe pressure symptoms that are set up. The affection ends in nearly every case in premature delivery before the end of the seventh month; in the majority of the cases labour comes on spontaneously; in about 20 per cent. it has to be induced. The contents of the uterus are found to be twin foetuses of the same sex, one of which is decidedly larger than the other and is enclosed in an amnion containing an enormous excess of fluid; the smaller foetus is provided, as a rule, with a normal or deficient quantity of liquor amnii. There are a single placenta common to the two foetuses, a single chorion, and two amnia. The heart and kidneys of the larger foetus are hypertrophied, often enormously. Neither foetus shows any malformation, and the mother is healthy. The cause of the hydramnion is found in the relation of the vessels of the two foetuses to the common placenta. The twin whose vessels run a shorter or more direct course obtains an undue share of blood from the placenta, in which anastomoses take place between the vessels belonging to the two foetuses.

In this way one foetus grows faster than the other, and its heart becomes not only absolutely but also relatively larger than that of the other; that is to say, its heart becomes really hypertrophied. This leads in some way to increased uptake of fluid in the placenta, and so to increased exudation by this twin. This increased exudation takes the form of excessive secretion, certainly from the kidneys, probably from the skin, and possibly also from the portion of placenta belonging to the affected foetus; and the accumulation of these discharges leads rapidly to enormous hydramnion of the same foetus. The diagnosis can often be completely made by observing that the signs of a foetus are limited to a small portion of the circumference of a hydramniotic cyst. The appropriate treatment consists in the induction of premature labour by puncture of the membranes.—*Medical Press and Circular.*

K. N. DASS, M.D.

Service Notes.

THE SERVICES IN 1899.

We are indebted, as usual, for the following account of events which have taken place in the services during the past year, to Major D. G. Crawford, I.M.S., who has kindly forwarded the notes to us from home:—

"The chief event in the history of the Medical Services in 1899 has, of course, been the war in South Africa, the stress of which has fallen entirely on the R.A.M.C., there having been only two officers and six Assistant-Surgeons of the Indian Service employed in Natal.

"Up to the end of the year two officers of the R.A.M.C. had been killed in action: Major E. W. Gray, at Farquhar's Farm, near Ladysmith, on 30th October; and Captain M. L. Hughes, at Colenso, on 15th December. The former had only left Calcutta a few weeks previously, with the K. R. R. C.; the latter, who was on the personal staff of General Sir Redvers Buller, was well known as a scientific writer.

"Owing to the war the number of retirements from the R.A.M.C. during the year has been very small, only 22. If from these be deducted retirements on account of age, resignations, and transfers to and from the half-pay list, less than a dozen remain. From the Bengal Medical Service on the other hand, the number of retirements was unusually large, 17. The best known officers who retired during the year were Surgeon-Generals Churchill, Mansell, and Nash, of the R.A.M.C., Colonels Warburton and Ryee, of Bengal, and Major Ronald Ross, of Madras.

"The vacancy caused by the retirement of Surgeon-General Churchill in the R.A.M.C. was not filled up, but an appointment to the rank of Colonel was made in his place. Similarly in Bengal the vacancy caused by the retirement of Colonel Warburton was absorbed by Colonel Franklin, who was promoted to that rank and seconded on 24th October 1897. The number of honours which fell to the lot of the Medical Services was fairly liberal, especially in the R.A.M.C., members of which received decorations for the Sudan, Crete, and Uganda, while plague and famine earned a few for some officers of the Indian Medical Service.

"Several retired officers of the Indian Medical Service have been appointed to lectureships in tropical diseases in various Medical Schools at home, viz., Brigade-Surgeons Crombie at Middlesex Hospital, and Macnamara at Aberdeen University, and Major Ronald Ross at the Liverpool School; while Lieutenant-Colonels Oswald Baker and Andrew Duncan obtained posts on the staff of the Seamen's Hospital, Greenwich, in connection with the London School of Tropical Medicine. Colonel Warburton was appointed Superintendent of the Edinburgh Royal Infirmary, in place of Surgeon-Major General S. A. Lithgow, deceased. Among the best known officers on the retired list who have gone over to the majority during 1899 were Surgeon-General Sir J. Mouat, K.C.B., V.C.; J. Macbeth, W. M. Webb, J. A. W. Thompson, J. A. S. Fugo, W. G. Watt, Sir C. Gordon, K.C.B.; S. A. Lithgow, and J. Ogilby; also Deputy-Surgeon-General J. Jee, C.B., V.C., who won the Victoria Cross at the siege of Delhi. All the above served in the Army Medical Department. Sir William Henry Fowler, K.C.B., of the Natural History Museum, and Mr. W. I. Wheeler, of Dublin, had also served as Assistant-Surgeons in the Army Medical Department, though their reputations had been gained subsequent to their resignation of the service. Surgeon-generals gained in some way to their resignation of the service. Surgeon-Majors F. W. Macnamara and W. C. B. Eatwell, all of Surgeon-Majors F. W. Macnamara and W. C. B. Eatwell, all of Bengal were the most widely known retired officers of the

I.M.S. who died during the year. The death should also be mentioned of Surgeon-Major J. Bowron, who entered the Bengal Medical Service in 1825, retired in 1851, and died at Hove on 5th March 1899 at the patriarchal age of one hundred years some odd months."

I.—ROYAL ARMY MEDICAL CORPS.

A.—DEATHS.

| Rank and Name. | Date. | Remarks. |
|------------------------|-------------|---------------------------------|
| Col. J. Fraser | ... May 9 | York. |
| Col. J. H. Hughes | ... Nov. 14 | Babar, Beluchistan [Hepatitis]. |
| Lt.-Col. P. R. Gabbett | ... Feb. 27 | Southsea. |
| Maj. T. Dorman | ... Dec. 26 | Jersey. |
| Maj. F. T. Skerrett | ... Aug. 19 | Harrogate. |
| Maj. J. R. Barefoot | ... Feb. 19 | Grays, Essex. |
| Maj. E. W. Gray | ... Oct. 30 | Killed in action Ladysmith. |
| Capt. M. L. Hughes | ... Dec. 15 | Killed in action Colenso. |

B.—RETIREMENTS.

| Rank and Name. | Date. | Remarks. |
|------------------------------|--------------|---|
| Surgn.-Genl. A. F. Churchill | ... June 14 | ..... |
| Surgn.-Genl. T. Mansell | ... July 1 | ..... |
| Surgn.-Genl. W. Nash | ... Nov. 20 | ..... |
| Col. R. P. Ferguson | ... Mar. 13 | ..... |
| Lt.-Col. J. J. Greene | ... April 15 | ..... |
| Lt.-Col. R. D. Bonnett | ... May 10 | ..... |
| Lt.-Col. A. L. Browne | ... July 19 | ..... |
| Lt.-Col. G. T. Lingridge | ... Aug. 2 | ..... |
| Lt.-Col. C. E. Dwyer | ... Aug. 9 | ..... |
| Maj. R. F. Adams | ... Mar. 29 | ..... |
| Maj. J. W. Beatty | ... June 14 | ..... |
| Maj. W. G. Clements | ... June 14 | ..... |
| Maj. C. S. Spong, D.S.O. | ... Aug. 16 | ..... |
| Maj. S. H. Creagh | ... Aug. 23 | ..... |
| Maj. R. N. Buist | ... Sept. 26 | On T. H. P. [Full pay, 11th Nov.] |
| Capt. A. J. Chambers | ... Jany. 9 | On T. H. P. |
| Capt. H. A. Berryman | ... Feby. 28 | On T. H. P. |
| Capt. J. A. Murison | ... Mar. 31 | ..... |
| Capt. C. S. Robinson | ... April 7 | From T. H. P. [T. H. P. since 7th April 1894.] |
| Capt. J. F. MacMillan | ... Sept. 22 | From T. H. P. [T. H. P. since 22 Sept. 1894.] |
| Capt. H. A. deLomas | ... Sept. 28 | From T. H. P. [T. H. P. since 28th Sept. 1894.] |
| Lt. A. B. MacCarthy | ... June 24 | ..... |

C.—PROMOTIONS.

| Old Rank & Name | New Rank. | Date. | Remarks. |
|--------------------------|--------------|---------|----------------------------|
| Col. T. O'Farrell | Surgn.-Genl. | July 1 | v. Mansell, R. |
| Col. G. J. H. Evatt | Surgn.-Genl. | Nov. 20 | v. Nash, R. |
| Lt.-Col. J. A. Clory | Col. | Mar. 13 | v. Ferguson, R. |
| Lt.-Col. W. J. Fawcett | Col. | May 10 | v. Fraser, D. |
| Lt.-Col. W. E. Saunders | Col. | June 14 | To complete establishment. |
| Lt.-Col. W. J. Charlton | Col. | July 1 | v. O'Farrell, P. |
| Lt.-Col. A. F. Anthonisz | Col. | Nov. 15 | v. Hughes, D. |
| Lt.-Col. R. Exham | Col. | Nov. 20 | v. Evatt, P. |

D.—HONOURS.

| Rank & Name. | Honour. | Date. | Remarks. |
|--|-------------------------|----------|-----------------------------------|
| Surgn.-Genl. J. A. Woolfryes, C.B., C.M.G. | Q.H.P. | Jan. 18 | [Retired] v. Smith, D. |
| Surgn.-Genl. T. A. Marston, C.B. | Q.H.S. | April 26 | [Retired] v. Jee, D. |
| Surgn.-Genl. A. A. Goro. | C.B. | June 3 | [Retired.] |
| Surgn.-Genl. W. Medjidie Taylor, C.B. | For Soudan [2nd class]. | May | Taylor, C.B. |
| Surgn.-Genl. A. H. Frasier. | Q.H.P. | Dec. 23 | [Retired] v. Sir C. A. Gordon, D. |
| Surgn.-Maj.-Genl. A. F. Bradshaw, C.B. | Q.H.P. | Dec. 23 | [Retired] v. Lithgow, D. |
| Dy. Inspn.-Genl. J. Jee, V.C., C.B. | Q.H.S. | March 8 | [Retired] v. Mouat, D. |
| Dy. Surgn.-Genl. Sir R. W. Jackson, C.B. | Pen-sion. | Jan. | .... |
| Lt.-Col. A. T. Sloggett. | Medjidie | May | [3rd class]. For Soudan. |
| Maj. D. Bruce | R.R.S. | .... | .... |

| Rank & Name. | Honour. | Date. | Remarks. |
|-------------------------|----------|---------|--------------------------|
| Maj. W. Babtie | C.M.G. | June 3 | For Crete. |
| Capt. G. S. McLoughlin. | D.S.O. | Jan. 25 | For Uganda. |
| Capt. J. D. Ferguson | D.S.O. | Jan. 25 | For Uganda. |
| Capt. J. W. Jennings | Medjidie | May | [4th class]. For Soudan. |
| Capt. H. P. Dunn | Medjidie | May | [4th class]. For Soudan. |
| Capt. P. H. Whiston | Omanish | May | [4th class]. For Soudan. |
| Capt. J. W. Jennings | D.S.O. | June 30 | For Soudan. |
| Capt. T. H. Clarke | D.S.O. | March 8 | For Crete. |

E.—DEATHS OF RETIRED OFFICERS.

| Rank & Name. | Date. | Remarks. |
|---|------------|-------------------------|
| Surgn.-Genl. Sir J. Mouat, v.c., K.C.B. | Jan. | 4 Kensington. |
| Surgn.-Genl. J. Macbeth | ... Jan. | Rome. |
| Surgn.-Genl. W. M. Webb | March 18 | Cairo. |
| Surgn.-Genl. J. A. W. Thompson | July 24 | Cheltenham. |
| Surgn.-Genl. W. G. Watt | July 18 | Deal. |
| Surgn.-Genl. J. A. S. Fogo | Sept. 20 | London. |
| Surgn.-Genl. Sir C. A. Gordon, K.C.B. | Sept. 30 | London. |
| Surgn.-Genl. J. Ogilvy | Dec. 23 | Tunley, Survey. |
| Surgn.-Major-Genl. S. A. Lithgow. | Sept. 20 | Melrose. |
| Dy. Inspn.-Genl. H. Pillean | July 28 | Brighton. |
| Dy. Inspn.-Genl. R. MacWharrie | Aug. 28 | Biggar. |
| Dy. Inspn.-Genl. J. S. Prendergast. | Nov. 20 | Bath. |
| Dy. Surgn.-Genl. J. Gee, v.c., C.B. | March 17 | Leicester. |
| Dy. Surgn.-Genl. E. G. Ley | June 14 | Ealing. |
| Dy. Surgn.-Genl. W. R. Lane | June 17 | London [Scots Guards]. |
| Dy. Surgn.-Genl. J. L. Erskine | Aug. 25 | Bournemouth. |
| Dy. Surgn.-Genl. C. M. Jessop | Sept. 30 | [Bright's Disease.] |
| Bde.-Surgn. W. W. Quinton | March 13 | King's Paquoton, Devon. |
| Bde.-Surgn. D. F. de Hodgson | April 9 | Carlisle. |
| Bde.-Surgn. J. G. Grant | April 19 | Bath. |
| Bdg.-Surgn. Lt.-Col. G. Andrew | Oct. 19 | Aberdeen. |
| Surgn.-Lt.-Col. W. G. Grant | Nov. 5 | Banagher King's Co. |
| Lieut.-Col. J. J. Greene | Aug. 18 | Greystones, Wicklow. |
| Surgn.-Maj. J. S. M. Smith | March 1 | Edinburgh. |
| Surgn.-Maj. W. Carte | April | Dublin. |
| Surgn.-Maj. E. D. Evezard | Aug. 1 | Broadstairs. |
| Surgn.-Maj. E. G. Kellett | Oct. 8 | Southsea. |
| Surgn.-Maj. A. K. Rickards | Nov. 7 | Southsea. |
| Maj. R. Hardinge | Nov. 13 | Paquoton. |
| Surgn. E. D. Batt | March 13 | Abergavenny. |
| Surgn. J. A. MacMunn | Dec. 14 | St. Leonards. |
| Asst.-Surgn. Sir W. H. Flower, K.C.B. | ... July 1 | London. |
| Asst.-Surgn. W. I. de C. Wheeler | Nov. 25 | Dublin [Enteric fever]. |
| Asst.-Surgn. W. N. Thursfield | Dec. 19 | |

II.—BENGAL MEDICAL SERVICE.

A.—DEATHS.

| Rank & Name. | Date. | Remarks. |
|---------------------|----------|--------------------|
| Maj. J. F. Evans | March 13 | Calcutta [Plague]. |
| Capt. A. O. Hubbard | April 8 | Cairo. |

B.—RETIREMENTS.

| Rank & Name. | Date. | Remarks. |
|--|----------|------------------|
| Col. W. P. Warburton, C.S.I. | Jan. 17 | ... |
| Col. D. O'C. Raye | April 2 | ... |
| Col. A. Stephen | May 19 | ... |
| Lt.-Col. W. H. Gregg | Dec. 4 | ... |
| Lt.-Col. D. N. Martin | May 1 | [Extra pension.] |
| Lt.-Col. W. Flood Murray | Dec. 18 | ... |
| Lt.-Col. W. R. Murphy, D.S.O. | July 15 | ... |
| Lt.-Col. J. Scully | April 8 | [Extra pension.] |
| Lt.-Col. R. L. Dutt | Oct. 30 | ... |
| Lt.-Col. R. A. K. Holmes | March 20 | ... |
| Lt.-Col. J. Armstrong | Oct. 17 | ... |
| Lt.-Col. W. H. Cadge | Nov. 15 | ... |
| Lt.-Col. G. F. Nicholson | Feb. 23 | ... |
| Lt.-Col. Sir G. S. Robertson, K.C.S.I. | Oct. 22 | ... |
| Maj. S. Hassan | Jan. 1 | ... |
| Maj. L. T. Young | April 29 | ... |
| Capt. A. E. H. Pinch | Dec. 17 | On T. H. P. |

C.—PROMOTIONS.

| Old Rank & Name. | New Rank. | Date. | Remarks. |
|---------------------|-----------|---------|-------------|
| Lt.-Col. C. W. Carr | Col. | April 2 | v. Raye, R. |
| Calthrop. | | | |

| | | | |
|---------------------|------|--------|----------------|
| Lt.-Col. A. S. Reid | Col. | May 19 | v. Stephen, R. |
|---------------------|------|--------|----------------|

D.—HONOURS.

| Rank & Name. | Honour. | Date. | Remarks. |
|-----------------------|-----------|--------|--------------------------------------|
| Col. W. P. Warburton, | C.S.I. | Jan. 1 | ... |
| Lt.-Col. H. McKay | C.I.E. | Jan. 1 | ... |
| Lt. W. J. Niblock | Asst. St. | Jan. 1 | For plague (Indian Medical Service). |
| John, Jerusalem | | | |

E.—DEATHS OF RETIRED OFFICERS.

| Rank & Name. | Date. | Remarks. |
|--------------------------------------|--------------|----------|
| Surg.-Genl. R. Cockburn | ... April 30 | London. |
| Dy. Surgn.-Genl. G. E. Carroll, C.B. | ... April 28 | Dublin. |

| | | |
|---------------------------------------|--------------|----------------------|
| Bde.-Surgn. R. Pringle | ... Jan. 13 | Blackheath [Angina]. |
| Bde.-Surgn. J. Bennett | ... June 28 | Jersey. |
| Bde.-Surgn. G. W. Jameson | ... Nov. 14 | Blackheath. |
| Bde.-Surgn. Lt.-Col. C. J. W. Meadows | ... Aug. 2 | Norwood [Accident]. |
| Surgn.-Maj. J. Bowron | ... March 5 | Hove [Aged 100]. |
| Surgn.-Maj. F. W. Macnamara | ... March 5 | London. |
| Surgn.-Maj. R. Moir | ... June 7 | St. Andrews. |
| Surgn.-Maj. W. C. B. Eatwell | ... Aug. 7 | Norwood. |
| Surgn.-Maj. G. C. Wallich | ... March 31 | ... |
| Surgn. M. W. Mott | ... July 27 | ... |
| Asst.-Surgn. J. A. Sewell | ... Jan. 2 | Mentone. |

III.—MADRAS MEDICAL SERVICE.

A.—DEATHS.

| Rank & Name. | Date. | Remarks. |
|--------------------|-------------|----------|
| Capt. J. P. Morton | ... Sept. 6 | London. |

B.—RETIREMENTS.

| Rank & Name. | Date. | Remarks. |
|--------------------------|-------------|----------|
| Lt.-Col. W. H. Thornhill | ... April 9 | .... |
| Lt.-Col. E. Fawcett | ... Dec. 28 | .... |
| Lt.-Col. C. Mallins | ... May 1 | .... |
| Maj. A. G. E. Newland | ... Aug. 1 | .... |
| Maj. R. Ross | ... July 31 | .... |

C.—PROMOTIONS.

| Old Rank & Name. | New Rank. | Date. | Remarks. |
|------------------|--------------|---------|--------------------|
| Col. D. Sinclair | Surgn.-Genl. | Oct. 11 | v. Sibthorp, T. E. |

D.—HONOURS.

| Rank & Name. | Honour. | Date. | Remarks. |
|----------------------------------|---------|--------|--------------------------|
| Col. D. Sinclair | C.S.I. | Jan. 1 | ... |
| Dy. Surgn.-Genl. W. Colvin Smith | Q.H.S. | July 5 | [Retired] v. Maclean, D. |
| Lt.-Col. W. B. Browning | C.I.E. | Jan. 1 | ... |
| Lt.-Col. W. G. King | C.I.E. | June 3 | .... |

E.—DEATHS OF RETIRED OFFICERS.

| Rank & Name. | Date. | Remarks. |
|-----------------------|--------------------|----------|
| Surgn.-Genl. W. Pearl | ... Jan. 10 | London. |
| Asst.-Surgn. K. Joppe | ... Dec. 31, 1898. | .... |

IV.—BOMBAY MEDICAL SERVICE.

A.—DEATHS—Nil.

B.—RETIREMENTS.

| Rank & Name. | Date. | Remarks. |
|---------------------------|--------------|----------|
| Lt.-Col. C. T. Peters | ... June 24 | .... |
| Lt.-Col. C. W. G. Howdell | ... April 30 | .... |

C.—PROMOTIONS—Nil.

D.—HONOURS.

| Rank & Name. | Honour. | Date. | Remarks. |
|-------------------------|-----------|--------|-----------------------------|
| Capt. J. T. Lloyd Jones | Asst. St. | Jan. 1 | For plague, John, Jerusalem |

| Rank & Name. | Honour. | Date. | Remarks. |
|----------------------|----------------------------|-------|---------------|
| Capt. W. E. Jennings | Asst., St. John, Jerusalem | Jan. | 1 For plague. |
| Capt. A. F. W. King | Asst. St. John, Jerusalem | Jan. | 1 For plague. |

E.--DEATHS OF RETIRED OFFICERS.

| Rank & Name. | Date. | Remarks. |
|--|----------|-------------------|
| Surgeon-Genl. L. S. Bruce | ... Jan. | 2 Ealing. |
| Dy-Surgenl.-Genl. H. R. L. Macdougall. | Feb. | 9 Oban. |
| Bde-Surgen. G. Y. Hunter | ... Aug. | 11 London. |
| Maj. A. F. Ferguson | ... June | 7 Cove, Aberdeen. |

We have in a recent issue commented upon what has been called the "flexion" or "bent knee" method of marching. An American General once defined the science of war as "getting there first with the most men," and recent events in South Africa have shown the great necessity of mobility. So as all the Army cannot be composed of mounted men it is worth trying to find out if the method of marching now taught to soldiers is the best possible. Consequently in the French and in the American armies much attention has recently been given to the new method, which is claimed to be more natural and in every way superior. The two accompanying outlines will give a good idea of the difference between the erect or ordinary gait and the bent knee or natural gait.

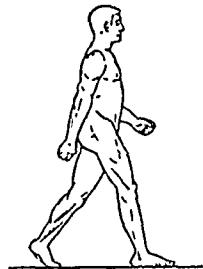


Fig. 1.

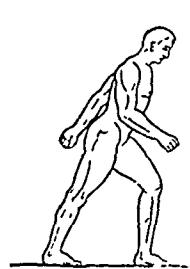


Fig. 2.

A recent writer, Dr. E. H. Burford (*New York Med. Journal*), thus writes of the two methods of progression. "The erect or city gait is a straight legged gait, the inclined or knee bent gait is the gait for rough country, for all who walk for a distance up to the limit of their strength. It is the gait instinctively taken by boys when endeavouring to keep up with older and larger pedestrians who are walking rapidly. In addition to the bent leg there is what is equally important, the position of the trunk inclined forward from the line of equilibrium, thereby utilising the force of gravity as a propelling force. The gait is easily recognised not only by the bent knee of the forward leg, the position of the head and shoulders well forward, nearly if not quite over the forward foot, but also by the lack of rise and fall of the trunk in the walk, and by the fact that the feet are kept nearly straight and not turned out. It is evident that there are gradations between the two wellmarked types of locomotion, but the rate of speed which can be acquired by the average man in the bent knee is much greater than that attained by the straight leg gait. This gait though in rapidity at times resembling a run differs from the run in that both of the feet are never lifted off the ground at the same time." A writer in the *Contemporary Review* shows that by proper training great speed may be acquired and tells us that a body of artillerymen after a course of eighteen lessons marched five miles in forty-six minutes with arms only, and two and a half miles in twenty-six minutes with full equipment.

The seventy-ninth session of the Army Medical School, Netley, was brought to a close on January 30th. In consequence of the war in South Africa there was no public distribution of prizes. It will be remembered that the officers of the Royal Army Medical Corps passed out of the school in two batches during the months of November and December. Most of them are now in South Africa.

INDIAN MEDICAL SERVICE.

The following is the list of surgeons on probation who were successful at both the London and Netley examinations, January 30th, 1900. The prizes are awarded for marks gained in the special subjects taught at the Army Medical School. The final positions of these gentlemen are determined by the marks gained

in London added to those gained at Netley, and the combined numbers are accordingly shown in the list which follows:

| | Marks. | | Marks. |
|---------------------|--------|-----------------|--------|
| *A. C. MacGilchrist | 6063 | T. G. N. Stokes | 4694 |
| J. W. D. Megaw | 5309 | H. M. Mackenzie | 4656 |
| †E. O. Thurston | 5223 | M. H. Thornley | 4520 |
| G. Browne | 4996 | F. V. O. Bell | 4473 |
| C. M. Goodbody | 4991 | W. O'S. Murphy | 4305 |
| R. Steen | 4970 | M. Corry | 4173 |
| F. F. Elwes | 4965 | C. M. Murison | 4097 |
| J. L. MacInnes | 4882 | H. A. Williams | 3969 |
| E. A. C. Matthews | 4851 | W. C. Long | 3954 |
| †L. P. Stephen | 4845 | G. C. Beamish | 3743 |
| L. Gilbert | 4813 | | |

The following gentlemen obtained honourable mention in the subjoined departments:—Military Surgery: Mr. R. Steen, Mr. E. A. C. Mathews, and Mr. F. F. Elwes. Military and Tropical Medicine: Mr. H. M. Mackenzie, Mr. J. W. D. Megaw, and Mr. L. P. Stephen. Military Hygiene: Mr. T. G. N. Stokes, and Mr. H. M. Mackenzie. Pathology: Mr. E. O. Thurston and J. W. D. Megaw.

The following is a list of successful candidates for commissions in the Royal Army Medical Corps at the recent examination in London:—

| Order of Merit. | Names. | Marks. | Order of Merit. | Names. | Marks. |
|------------------|--------|--------------------------|-----------------|--------|--------|
| 1. T. Biggam | 2554 | 10. W. J. P. Adye-Curran | 2185 | | |
| 2. H. Richardson | 2532 | 11. J. Powell | 2156 | | |
| 3. C. H. Carr | 2490 | 12. R. L. Argles | 2039 | | |
| 4. W. L. Baker | 2462 | 13. J. G. Foster | 1975 | | |
| 5. F. W. Cotton | 2320 | 14. F. P. Lauder | 1970 | | |
| 6. E. Bennett | 2975 | 15. E. G. Ford | 1803 | | |
| 7. F. M. Parry | 2248 | 16. F. S. Walker | 1802 | | |
| S. B. R. Dinnis | 2221 | 17. L. M. Purser | 1100 | | |
| J. S. Twigg | 2183 | | | | |

The following is a list of the candidates for Her Majesty's Indian Medical Service who were successful at the competitive examination held in London on February 2nd and following days:—

| Marks. | Marks. |
|-----------------|--------|
| J. D. Graham | 3640 |
| C. A. Sprawson | 2936 |
| W. H. Cazely | 2928 |
| W. V. Coppering | 2912 |
| P. A. Browne | 2783 |
| A. Spitteler | 2768 |
| M. Mac Kelvie | 2651 |
| L. J. M. Deas | 2621 |
| W. G. Hamilton | 2620 |

It is to be noted that only seventeen officers have been passed into the R. A. M. C. although thirty vacancies were announced. This is disappointing.

LADYSMITH.

The first news of the condition of the Ladysmith garrison is to hand as we go to press. All that at present is known in India is due to the enterprise of the *Pioneer*. A total of 8,000 patients passed through the hospitals; if this refers to the garrison alone it is a heavy rate of sickness. From wounds in action twenty-four officers and two hundred and forty men have succumbed, and six officers and three hundred and forty men from disease. As was expected the chief diseases have been enteric fever, dysentery and scurvy. Medical supplies ran short by the middle of January.

The relief felt throughout the Empire at the relief of this brave garrison is enhanced now that we know the straits to which a four months' siege had reduced them. The medical history of the siege will be interesting reading.

WE are glad to see that a good service pension of £100 a year has been granted to Surgeon-General W. Taylor, M.D., C.B., Principal Medical Officer, H. M.'s Forces in India.

THE retirement from the Service of Lieutenant-Colonel A. Duncan, I.M.S., F.R.C.S., is gazetted. He joined the staff of the London School of Tropical Medicine last year.

CAPTAIN CARTER, R.A.M.C., and Lieutenant Stoddard, R.A.M.C., were wounded in the fighting at Paardeberg. Captain Charles Dalton, R.A.M.C., was wounded at Chevally on 23rd January.

* Gained the Herbert Prize of £20, the Martin Memorial Medal, the Parkes Memorial Medal, the Second Montefiore Prize in Military Surgery, the Pathology Prize presented by the Director-General, A.M.S., and the Maclean Prize for Clinical and Ward Work.

† Gained the First Montefiore Prize of 20 guineas and the Bronze Medal in Military Surgery.

‡ Gained the de Chaumont Prize in Hygiene.

GAZETTE NOTIFICATIONS.

APRIL 1900.]

Up to the end of January two officers of the R.A.M.C. had been killed in action, and five wounded, and two men killed and three wounded of the Corps. To this must be added the two officers above mentioned wounded at Paardeberg, and Capt. R. Holt, R.A.M.C., who was killed in the action at Colenso on 21st February.

MR. ARTHUR POWELL, M.Ch., has gone out with Lumsden's Horse as medical officer. He is in charge of the X-Ray apparatus presented by the Maharajah of Tagore. We are glad to hear that the authorities have been liberal in the matter of this officer's pay.

No less than six medical men have gone out with Lumsden's Horse, five as Troopers and one as a Lieutenant. The strange thing is, nevertheless, that men will not join the R.A.M.C. in sufficient numbers to fill the ordinary vacancies.

CAPTAIN C. H. BEDFORD, I.M.S., M.D., is due to return from leave in March, and succeeds Major L. A. Waddell, I.M.S., as Chemical Examiner, Calcutta.

Major Waddell then returns to regimental duty.

It was perhaps just as well that a Natal paper made complaints as to the state of the military hospitals in Natal, seeing that it drew forth the following statement from General Buller, "One of the Natal papers is attacking the management of the military hospitals and as some of the false and ridiculous statements may cause anxiety at home, I think it right to say that Mr. Treves assures me that there is no possible ground for complaint and that I may rest satisfied that all the medical arrangements are satisfactory to him. I pressed him if he could suggest improvement and he said he could not. I have given the matter every consideration and can only express my admiration for the arrangements made by Colonel Gallwey and the R.A.M.C. and Mr. Treves assures me that he entirely agrees with me."

The Staff at Netley will be hard worked as the wounded begin to return to England. Colonel W. J. Charlton, R.A.M.C., is now the temporary P. M. O., pending the return from the war of Surgeon-General Wilson now with Lord Roberts. Lieut.-Colonel W. E. Webb, R.A.M.C., is in charge of the Medical Division and Major W. Dick in charge of the Surgical Division. In addition to a few Officers of the R.A.M.C. there are a couple of Militia Medical Officers and four or five civilian Surgeons. The nurses mostly at present belong to the Army Reserve of Nurses and the men of the Corps are replaced by Militia orderlies.

Netley is not likely to be short handed when we remember there is in addition to the above the ordinary Teaching Staff of the School and in March some fifty or so qualified men joined as probationers for the R.A.M.C. and I.M.S. Up to the middle of February one thousand men had been admitted from South Africa. We are glad to see that the railway line is now being completed right up to the back verandah of the hospital, so that patients can be landed from the hospital train at the very door of the hospital.

In addition to the accommodation inside the hospital, steps are now being taken to erect a large number of huts for convalescents in the grounds of the hospital.

THE Medical School at Netley for this session opened on 1st March instead of 1st April as usual.

A STEP in the right direction has been taken in sending out Mr. Newland Pedley, and a capable staff of Dentists for the hospitals in South Africa. Many dental pupils are accompanying him and we are glad to see that the Royal College of Surgeons have consented to recognise six months' service with the hospitals at the war as equivalent to six month of the ordinary curriculum.

MAJOR WALTER KIDDLE, R.A.M.C., who was murdered by the Was, when on duty with the Chinese Boundary Commission in Upper Burma was a distinguished graduate of Trinity College, Dublin. He took first place both at the M.B., and at the B.C.H. degree examinations, and was a Senior Moderator and Gold Medallist in Natural Science in the University. He entered the A.M.S. in 1880 and being stationed shortly afterwards in Dublin, he amused himself in taking as many qualifications as a man could well take. He was probably the most "qualified" man in the medical services. His list of qualifications reads as follows:—B.A. (Dub.), M.B., B.C.H. and M.D. (Dub.), L.R.C.P.I., L.M.R.C.P.I., L.M., Rotunda (with special certificate), and the following diplomas in public health, viz., the Diploma in State Medicine of the University of Dublin, the Diploma in Public Health of the three Royal Colleges of Surgeons of Dublin, Edinburgh, and Glasgow,

in addition he took the Parkes Memorial Medal for Hygiene at Netley in 1896. A younger brother of his, Captain F. Kiddle, is also in the R.A.M.C., and is stationed in the Bombay Command.

We understand that Captain P. W. O' Gorman, I.M.S., M.D. (Brux), D.P.H., will shortly be appointed to act as medical store-keeper, to the Punjab Command.

THE following Medical Officers are appointed Fellows of Calcutta University, viz., Lieut.-Colonel G. Harris, I.M.S.; Major D. Prain, I.M.S.; and Major H. J. Dyson, I.M.S.

ONE interesting feature of the Plague Commission's Report is the mention of a large number of junior medical officers, I.M.S., who have done good work as bacteriologists, and whose work is quoted therein, e.g., Capt. C. J. Milne, I.M.S.; Lieutenant F. L. Hammond, I.M.S.; Lieut. W. Glen Liston, I.M.S.; Capt. C. A. Johnston, I.M.S.; Lieut. Steward Douglas, I.M.S.; Lieut. Lethbridge, I.M.S., and Capt. Walton, I.M.S. Most of these officers have had the advantage of the course on Bacteriology under Professor A. E. Wright, at Netley.

Gazette Notifications.

INDIA.

The services of Captain E. V. HUGO, M.D., I.M.S., are placed at disposal of Punjab.

The services of Captain N. R. J. RAINER, I.M.S., are placed at disposal of Bombay.

The services of Captain T. E. WATSON, I.M.S., are placed at disposal of Madras.

N.W. P. AND OUDH.

Major G. M. J. GILES, F.R.C.S., I.M.S., has been allowed to return to India.

Major L. G. FISHER, I.M.S., is allowed furlough for 20 months.

The services of Major H. W. STEVENSON, I.M.S., are placed at disposal of N.W. Provinces.

Major S. H. HENDERSON, I.M.S., is permitted to return to India.

Captain C. MILNE, I.M.S., is transferred to Jaunpur.

ASSAM.

The services of Captain A. LEVENTON, I.M.S., are placed at the disposal of Assam.

Lieutenant C. F. WEINMAN, I.M.S., 3rd Bengal Infantry, to have temporary medical charge of Manipur State from 26th January and civil medical charge of Naga Hills from 11th February 1900.

Lieutenant-Colonel R. NEIL CAMPBELL, I.M.S., is granted 18 months furlough from 18th April.

Major E. R. W. CARROLL, I.M.S., is granted 18 months' furlough from 15th April.

BENGAL.

The services of the following officers are placed at disposal of Bengal:—

Captain T. A. O. LANOTON, I.M.S.

Captain A. F. STEVENS, I.M.S.

Captain E. W. BLISS, I.M.S., to civil medical charge of Dinapur, vice Major Noddings, R.A.M.C.

The services of Lieutenant-Colonel G. F. A. HARRIS, I.M.S., are replaced at disposal of the Central Provinces.

Major F. S. PECK, I.M.S., is appointed to be Professor of Midwifery, Medical College, Calcutta, vice Lieutenant-Colonel C. H. JOUBERT, I.M.S., F.R.C.S., promoted.

The services of Major H. C. BANERJI, I.M.S., and Captain A. GWYTHIAN, are placed permanently at disposal of Bengal.

BOMBAY.

Captain J. JACKSON, M.B., I.M.S., is invested with the powers of a Magistrate, cl. iii.

Lieutenant-Colonel J. W. CLARKSON, I.M.S., has been permitted to return to India.

Major B. B. GRAYROOT, I.M.S., has been allowed two years' furlough from 10th March.

Lieutenant-Colonel K. S. NARIMAN, I.M.S., is appointed a Fellow of Bombay University.

Captain J. G. HOJEL to be Civil Surgeon, Ahmednagar, from 31st March.

Lieutenant-Colonel C. F. WILLIS, M.D., I.M.S., to be Civil Surgeon of Satara.

Major W. H. STEVENSON, I.M.S., to be Civil Surgeon of Hyderabad.

Major R. J. BAKER to be Presidency Surgeon, 2nd District, vice Lieutenant-Colonel BARBER, I.M.S., retired.

Captain H. M. MOORE, I.M.S., to act as Civil Surgeon, Karwar.

The services of Captain H. A. L. HOWELL, R.A.M.C., Captain C. K. MORGAN, R.A.M.C., Captain R. W. JACKSON, R.A.M.C., are replaced at disposal of Military Department.

THERAPEUTIC NOTES.

Arsenic in Diabetes.—Wm. Murray, M.D., F.R.C.P., "Rough Notes on Treatment," 1899, pp. 19 and 108).—In the standard works not much stress is laid on the value of arsenic. The writer first puts the patient on the usual diet, and gives codeia. The next step is to bring him well under the influence of arsenic, and keep up the treatment for three months, during which he gradually returns to a more or less starchy and saccharine diet. The best preparation is liq. arsenici hydrochlor. It is better tolerated than Fowler's solution, and need not be given with meals. m. x t. d. is a proper dose.

In 1891, a man of good physique and active habits failed in health, lost flesh, and complained of thirst and dry mouth. In August the s.g. of the urine was 1042, it contained much sugar, and the daily quantity was 60 to 70 oz. He was a complete wreck. The diabetic diet and codeia materially lessened the quantity of urine, and reduced its s.g. to 1028. As no marked improvement in the general condition took place, and the sugar did not disappear, liq. arsen. hydrochlor. was tried, and at the end of six weeks the sugar had entirely disappeared, the s.g. was 1025, and the quantity of urine was 50 oz. per day. In 1892 he gradually returned to ordinary diet without the reappearance of sugar. In 1896 he was robust and free from disease.

Advantage ought to be taken of the improvement which usually follows dieting and codeia by then pushing the arsenic. Patients seem at that time peculiarly susceptible to the remedy. Codeia and diet seem to stop short at a considerable reduction of sugar and relief of the urgent symptoms, while arsenic completes the cure.

Since the writer published these remarks in the *Lancet* they have been confirmed by Sir Dyce Duckworth and others. Dr. Taylor, of Scarborough, wrote that he had "the most extraordinary successful results" with arsenic in diabetes. "In pure diabetes, and in the functional glycosuria, with pruritus of obese middle age, it is a charm." But in certain cases arsenic completely fails. The reason for the difference in results cannot be stated. Gouty and plethoric patients are unfavourable subjects. Where there is a hereditary tendency to the disease, as often exists in young patients, the remedy frequently fails. On the other hand, in a large proportion of successful cases, the disease seems to be due to overwork or worry, and especially to both. Thus in the case of a medical man, whose large practice broke him down, dietetic and other treatment failed, but after taking arsenic for a few months he lost all trace of glycosuria, and recovered.—*The Medical Review*.

Xeroform in Army Surgery.—E. P. Noguera, M.D., Surgeon-in-Chief of the Spanish Army Sanitary Corp., Cuba (*Rev. de Med. y Cirurg.*, April 25).—During the Cuban War bullet wounds were irrigated with a 1 in a 1,000 sublimate solution and a thin layer of powdered xeroform was applied at the points of entrance and exit, which were then covered with sublimate gauze and carbolic cotton. Healing without complication was obtained in one to three weeks, an extraordinary short time in the climate of Cuba. Cauterised wounds with loss of substance were longer in healing (36 days). But they remained dry and aseptic and became covered with healthy granulations in a short time. Suppuration never occurred. Xeroform was valuable when large numbers of wounded had accumulated since it dried up the moisture and sterilised the exposed surfaces. When it was unavoidable treatment could then be delayed from three days to a week. Similarly, xeroform can be used as a first dressing on the battlefield; wounds on which it is dusted and which are covered with pledges of cotton impregnated with the drug, remain aseptic for two or three days.—*The Medical Review*.

Treatment of a Case of Leprosy by Hypodermatic Injections of Chaulmoogra Oil.—Tourtoulis-Bey (*Annales de Dermatologie et de Syphiligraphie*, 1899, No. 7) reports a case of leprosy greatly improved by chaulmoogra oil administered hypodermatically. The patient, who was a native of Upper Egypt, presented well-marked symptoms of the disease, which was of the mixed variety and began at fifteen years of age. Chaulmoogra oil was at first prescribed in thirty to fifty drop doses by the mouth. At the end of two months there was decided improvement, but the patient was obliged to give up the oil because of the nausea and vomiting it produced. Later it was again tried, but had again to be abandoned as before. Hypodermatic injections were now used, and after fifty injections of five grammes each the lesions began to undergo retrogression. After six years of this treatment the patient was practically well.—*Amer Jour. of Med. Sciences*.

A case of Tetanus treated by the Intracerebral Injection of Antitoxin.—Cuthbert (*British Medical Journal*, November 18, 1899) adds still another case to the long list of fatalities following this method of treatment. Tetanus developed eleven days after injury, and the intracerebral injections were begun at once. None the less, the patient died in two days, when, the reporter remarks, he felt much better.

Potassium Permanganate Enemas in the Treatment of Dysentery.—Dr. Gastinel (*Archives de médecine navale*, 1899, No. 8; *Klinisch-therapeutische Wochenschrift*, October 15th) finds that potassium permanganate acts not only as an astringent, but also as an antiseptic in cases of dysentery and

exerts a very favourable influence upon the inflamed and ulcerated mucous membrane. Enemas containing the salt give rise to a dull pain, but it is quite bearable and soon subsides. A one-to-two-thousand solution is used, and about two ounces, heated to 113° F., are injected slowly. The enema should be retained from half a minute to two minutes, and before it is employed the rectum should be washed out with warm water. The patient should keep perfectly quiet for an hour after each injection. For children the solution should be of the strength of one to five thousand, and for very young infants of one to ten thousand. This treatment is quite efficient for proctitis also.—*New York Medical Journal*.

Sainger recommends hypodermic injections of pilocarpine in facial erysipelas. The drug must be administered until the physiological effects are produced. Pilocarpine is contra-indicated in affections of the heart. If the erysipelas appear as a complication, the treatment is absolutely without efficacy.

Langsdorff reports thirty-two cases of erysipelas of the face and other parts of the body treated with compresses saturated in absolute alcohol, with excellent results. To prevent evaporation the compresses must be covered with some impermeable material and should be changed every fifteen minutes, until all inflammation has subsided, two or three days being generally required.

General Treatment will essentially consist in feeding the patient and giving tonics; chief among these will be the tincture of the chloride of iron in doses of 30 drops every two hours. This is supposed to have more of a specific action than any other drug recommended for the purpose. The value of Marmorek's serum has not yet been established. (ERNEST LAPLACE, in *Sajou's Annual*.)

Arnozan advises that quinine should be administered in doses of eight to sixteen grains, in accordance with the temperature, four-grain pills being given three or four times daily; so that the patient is kept constantly under the influence of the drug. Over the affected surface is applied an ointment made up of—

R. Bichloride of Mercury 1 grain.
Lanolin } of each } ounce.
Vaseline }

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BOOKS, REPORTS, &c., RECEIVED.

Sir Wm Broadbent's "Heart Diseases," 2nd Ed. (Ballière, Tindall and Cox).

The Polyclinic, Vol. 2, Pt. 1.

Rhinoplasty Operations. By Keegan (Ballière, Tindall and Cox).

When to Wear Glasses. By Lieutenant-Colonel G. Hall, I.M.S.

Mentally Deficient Children. By Shuttleworth, 2nd Ed. H. K. Lewis, London.

Administration Report of Beluchistan Agency.

Rajputana Sanitary Report.

Rassegna Internazionale della Medicina Moderna No. 1, Catania,

geon-General Wyman. Washington, 1900.

New Series, Nos. 1 & 2.

COMMUNICATIONS RECEIVED FROM:—

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Original Articles.

TEN YEARS' SURGICAL WORK IN THE MISSION HOSPITAL, KASHMIR.

BY ERNEST F. NEVE, M.D., F.R.C.S.E.

IN 1890 we published a record of eight years' surgery in the Kashmir Mission Hospital. The present appears to be a convenient time to tabulate and analyse the work done during the ten years which have elapsed since that date. The following tables are compiled from the register of operations and the in-patient case sheets which hang at the bedside and contain an account of progress and results.

Table of operations performed in the Kashmir Mission Hospital during ten years from 1890 to 1899 inclusive :—

A.—EYE.

| | Cured or im- proved. | Not im- proved. | Left hos- pital. | Died. |
|---|----------------------------|--------------------|------------------------|-------|
| (1) Excision or evisceration | 55 | 0 | 0 | 1 |
| (2) Cataract extraction | 629 | 26 | 10 | ... |
| (3) Iridectomy | 419 | 41 | 1 | ... |
| (4) Trichiasis and entropium | 5,780 | ... | ... | ... |
| (5) Pterygium | 1,447 | ... | ... | ... |
| (6) Pannus (peritomy) | 83 | 1 | ... | ... |
| (7) Dacryocystitis and lacrimal obstruction | 301 | 3 | ... | ... |
| (8) Abscess or ulcer of cornea (Stemisch) | 114 | 3 | ... | ... |
| (9) Anterior staphyloma (abscission) | 87 | 1 | ... | ... |
| (10) Miscellaneous | 243 | 12 | 1 | ... |
| | 9,158 | 87 | 12 | 1 |

The most important of all eye diseases are new growths, because their tendency is not only to destroy sight but to prove fatal from extension. Of five cases of sarcoma, in four the operation was successful. In one recurrence took place. The following case is of interest : Case I—Spindle-celled sarcoma of sclerotic and cornea. Rahmi, female, *cet.* 30, came under treatment on February 22nd, 1894, for a growth resting partly on the sclerotic and partly on the cornea. This was excised by a native doctor. Four days later as rapid growth was evidently again taking place, Mr. Arthur Neve, F.R.C.S.E., excised it deeply. Once more it recurred, so he excised the eyeball, cutting the conjunctiva wide of the globe. The patient made an excellent recovery.

There were three cases of extensive epithelioma of the eyeball invading the orbit. Of these, one proved fatal. A foul epitheliomatous mass occupying and protruding from the orbit. The orbit was cleared out, but it was found impossible to remove the whole growth. The patient, who was feeble and suffering from the effects of septic absorption, died a few days subsequently. This was the only death connected with an eye operation and was entirely due to

the patient having come too late. Early operation for epithelioma of the eyeball is usually completely successful. The following is a typical example : Case II—Epithelioma of eyeball. Chanda, male, *cet.* 40, came to us on account of a fungating growth evidently from the conjunctival sac but entirely covering the cornea. The eye was enucleated by Mr. W. F. Adams, M.R.C.S., the patient made a rapid recovery. The growth was found to be typically epitheliomatous, with well-marked cell nests.

Amongst other new growths, not necessitating removal of the eye, may be mentioned cases of rodent ulcer of the eyelids, villous tumour of the cornea, serous cyst of the orbit, serous cyst of the sclerotic, pedunculated granulomata, papillomata and leprous tubercles.

Enucleation of the eyeball was performed forty-two times—usually for acute or chronic panophthalmitis, almost invariably the result of injury. Amongst an agricultural population certain accidents to the eye are frequent, such as kicks from horses, lacerated wounds produced by the horns of oxen, penetrating wounds by stalks of maize or rice and contused or punctured wounds from thorns or twigs, and chips of wood or stone. All these are apt to be followed by septic infiltration, and may result in total destruction of the eye. We have also had to enucleate the eye for anterior staphyloma, cyclitis and septic corneal ulceration. In a few cases of acute suppuration after cataract extraction enucleation was deemed advisable.

Evisceration was performed in six cases. If carefully done, with an ample incision and absolute erosion of all tissues down to the sclerotic, it is a neat and successful operation attended by less shock and less bleeding, and resulting in a better stump than that obtained after enucleation. Pain and swelling do not, however, subside so quickly as after an enucleation.

2. Cataract extraction. An operation for the extraction of cataract should never be regarded as anything but a very serious undertaking, a little want of care on the part of the surgeon or of the patient, and an exquisitely delicate organ becomes damaged or destroyed and sight is impaired or lost for ever !

A patient suffering from cataract walks into one's consulting room. What are the points to which attention should be directed if a successful operative result is to be obtained ?

(a) Is any other disease co-existent ? Glaucoma, for instance, greatly increases the risks and diminishes the chances of successful issue. If mature and good perception of light is present, it may be worth while to extract the lens some days after a preliminary iridectomy, but the risk of vitreous loss is high, and the results are disappointing. Out of a total of 619 cases of cataract extraction, of which I have full notes, four were glaucomatous, and the final result was poor in every instance.

Iritis exercises a very prejudicial influence on a subsequent extraction. Fifteen cases showed signs of previous iritis. These signs varied from an immobile pupil with extensive adhesions to the lens to those in which there were a few posterior synechiae. Two of these cases were not improved, in six the result was poor, and in six a fair measure of success was obtained.* The remaining case was quite a surgical triumph. I first did a preliminary iridectomy and fortunately obtained a wide coloboma. The rest of the iris still remained adherent to the anterior capsule of the lens. About ten days later I extracted the lens and subsequent needling gave an excellent result.

In posterior polar cataract the probabilities of deep seated disease are always great. In two cases of this kind the result after extraction was decidedly poor although some improvement was effected. Where there is general opacity of the lens and perception of light is present, it is not always easy to say whether there is disease of the retina choroid or vitreous. Sometimes the tension is diminished. The history, defective light perception and a careful study of the lens under oblique local illumination may throw light on the subject. In such cases operation is disappointing. The patient should be warned, and if still anxious to have the cataract removed, this may be done. In seven cases of this kind, three however were not improved, and in the remaining four the improvement was slight. In one case of dislocated lens associated with disease of the choroid and retina, the lens which was causing irritation was removed but with, of course, no improvement to sight.

Traumatic cataract also gives very poor operative results. Patients should be warned of this. The iris is often bruised and lacerated, and the final result is but too apt to be occlusion of the pupil. Of fourteen cases, two were not improved, four improved, and in six fair vision was obtained.

Diabetes is very rightly considered a contra-indication to operations in general surgery. Curiously enough cataract is an exception to the rule, and may be usually quite safely extracted. In eight cases we have had no failure.

The importance of healthy conjunctival and lachrymal sacs can hardly be overestimated. Any form of conjunctivitis, dacrocystitis, ectropium or entropium may be fatal to success owing to the danger of septic injection of the eye through the incision. Extreme degrees should be considered prohibitive. But, as a general rule, appropriate preparatory measures suffice to reduce the risk to the point at which it becomes

admissible to operate. In this way although the percentage of failure rises, many patients receive sight who might otherwise have been refused and left in a state of hopeless blindness. Thus of 185 cases in which the eye was red or irritable and with lachrymation or some tendency to morning gumming of the lids, in spite of preliminary treatment the results were in 33 cases only fair, in 16 cases poor, while 10 were not improved. In 35 cases of trachoma, the result in 7 cases was fair, in 5 poor, and there were 2 failures. This percentage of failure is high. But increasing care and experience continues to reduce it. Thus in our last 100 cases, out of 55 cases of conjunctivitis, there was only one failure. Pterygium *per se* has no bad influence; but ulcer of the cornea is of course an absolute contra-indication to operation.

(b) Is the lens mature? This must be determined in the usual manner, by the history, amount of opacity, degree of convexity of the anterior surface, and the presence or absence of iris shadow. Often, owing to circumstances, we have been obliged to operate before the cataract was ripe. In such cases, after extraction of the nucleus, careful intraocular irrigation has proved of great service.

Having decided that a given case is suitable for operation, the next question for the surgeon is whether preliminary treatment is required. A perfectly clean healthy eye may be operated upon at once. During the past ten years, however, we have steadily increased the number subjected to several days' preparation. In olden days the patients used to run away if not at once operated upon. Now, however, they have learnt our methods. Of the last 119 cases no fewer than 87 were treated for a period of one to three weeks before operation. The treatment is adapted to the needs of each case. Usually a solution of nitrate of silver is used for a few days, followed by milder astringents instilled three or four times daily. When the eye has become quite healthy, boracic lotion is used, and at the time of operation the conjunctival sac is very thoroughly syringed out with this. During the operation intermittent irrigation is usually maintained. With regard to instruments, all are boiled except the knife and tortoiseshell spoon which are immersed in $\frac{1}{2}$ carbolic lotion, and subsequently placed in boracic lotion.

With regard to the actual extraction, the chief points are (1) the incision, (2) iridectomy, (3) capsulotomy, (4) accidents.

(1) *Incision*.—In our last 119 cases, 107 were modified linear, the section lying as nearly as possible in the corneo-scleral margin. If too peripheral, the danger of vitreous loss is increased. If lower down, the lens has to be rotated, and this increases the difficulty of delivery.

(2) *Iridectomy*.—We have given the operation of extraction without iridectomy a good.

* In Kashmir, illiterates preponderate
Fair vision = finger counting with +3 D at less than 1 ft.

Poor vision = finger counting with +3 D at less than 6 feet.

trial. Of 619 cases, no iridectomy was done in 160. In twelve of these there was subsequent prolapse of the iris, and in twelve others there was iritis followed in six cases by total and in three cases by partial occlusion. In our experience certainly not more than 25 per cent. presented eventually a really central pupil—this fact being due to the mooring of the base of the iris to the back of the corneal wound and subsequent slight contraction on healing. When iridectomy is omitted, it appears to me that you can never feel sure that you may not find a prolapse of the iris on the occasion of your first dressing.

The danger of subsequent glaucoma is no doubt also somewhat increased. Apart from these objections the operation without iridectomy often gives very gratifying results.

(3) *Capsulotomy*.—Extraction of the lens in its capsule (except where the nucleus is small or the substance unusually soft) is apt to require an amount of force or a size of incision which is unsafe. The frequency of vitreous loss is increased. We have performed the operation in 21 cases. In no less than eight there was vitreous show. This seems to me prohibitive.

(4) *Accidents*.—Cocaine is of such immense value as a local anaesthetic that the tendency is to use nothing else. But in a really unsteady patient chloroform is much better. The worst accidents occur when a patient previously absolutely quiet gives a sudden violent jerk to the head. In one such case during the iridectomy the whole iris came away. In two others part of the iris was detached. In 55 (out of a total of 619) there was vitreous show or loss. In a certain number, the lens at once presents, the moment the incision is finished, and should the patient strain, it may be shot out and followed by vitreous. Again, it is undesirable to spend too much time over the toilet. Several times I have seen vitreous show or loss occur just at the end of a careful but too prolonged attempt to extract some cortex which is clinging perhaps to the capsular membrane. In such cases intraocular irrigation with a fine nozzle directed towards but not introduced between the lips of the incision (boiled filtered water being used) is often of demonstrable value in shortening the length of operation. The omission of iridectomy diminishes the risk of vitreous loss.

Inflammatory sequels usually take the form of iritis. Small degrees are very apt to escape record in one's notes. In our last 619 operations there were panophthalmitis 5, septic infiltration or sloughing of cornea 6, iritis 77, resulting in 15 cases in complete and in 6 cases in partial occlusion.

In our last 319 operations the failures have been reduced to just under 4 per cent.

3. *Iridectomy*.—Two hundred and fifty-three were performed for opacity of the cornea.

There are three chief causes of failure: (a) Sepsis. This can be practically eliminated by suitable preparation of the eye, instruments, &c.; (b) extensive anterior synechiae; (c) too large a leucoma, with the result that the pupil is too peripheral. Judicious selection of cases gives excellent results. We had nine failures.

In 130 glaucomatous eyes, iridectomy was performed. There were sixteen failures. In 94 cases there was only slight improvement, often little more than relief of pain. In 20 cases the result was good. One hundred and four iridectomies were done for occluded pupil. These were rather selected cases. In 56 the result was good, 39 fair, and 10 not improved.

In 57 rather doubtful cataracts, a preliminary iridectomy was performed; 54 did well. In one, panophthalmitis occurred, and in two occluding iritis.

4. *Iridotomy* is always rather a doubtful operation. Of ten cases, five were not improved.

In point of frequency the commonest eye diseases which require operative treatment are trichiasis and entropion.

The method which we adopt is, I suppose, a modification of Arlt's. But it is so rapid that although undoubtedly painful, we rarely have to give an anaesthetic. It is performed as follows:—The lid is everted and a spatula passed behind to protect the globe. An incision is now made on the conjunctival aspect of the lid near its free edge, between the roots of the cilia and the openings of the meibomian ducts. The punctum must not be wounded. This incision passes through the lower part of the tarsal cartilage, thus dividing the lid into two parts. The anterior of these contains the skin orbicularis muscle and the lower margin of the tarsal cartilage together with the eyelashes. The posterior part consists of the rest of the tarsal cartilage, meibomian glands and ducts and conjunctiva.

The spatula is now removed and the lid resumes its usual position. With dissecting forceps the skin of the dorsum is seized and raised opposite the point of greatest incurving of the lashes. With scissors an elliptical portion is removed corresponding to the whole width of the lid but not including the orbicularis muscle. The amount to be removed depends upon the degree of eversion required. It is important that the lower edge of this incision should come as near to the eyelashes as possible. The upper and lower edges of the incision are now united by three (or more) sutures of catgut or silk. If the lashes near either extremity of the incision are inturned, the amount removed from the dorsum at that part can be increased.

The operation takes less time to perform than to describe. The nutrition of the edge of the lid is never impaired as the anterior and posterior wounds do not communicate.

In the event of recurrence, which sometimes takes place after some years, the operation can be repeated, but only a small flap should be then taken from the dorsal surface, and a mucus membrane graft from the buccal cavity should be inserted into the incision on the conjunctival surface.

5. *Pterygium* is extremely common. We excise small ones, stitching the edges horizontally. In larger growths transplantation is performed.

6. *Pannus* is a troublesome affection. The results leave much to be desired. After treating the cause (usually with nitrate of silver followed by yellow oxide of mercury) we often perform peritomy. There is a curious condition usually involving the whole pericorneal zone consisting of firm swelling, injection and dusky discolouration—a chronic affection, for which peritomy appears to be the best remedy.

7. *Dacruocystitis* is common. It is frequently followed by stricture of the lachrymal duct. If seen early, the results of treatment are very satisfactory. Unfortunately many cases only come in after abscess and sinus formation.

8. *Ulcer of Cornea*.—This is of frequent occurrence and nearly always of a septic type, being often associated with hypopyon. The worst forms are met with in elderly people, in whom they often spread rapidly, for such we sometimes use the actual cautery. As a general rule, however, we cut through the base of the ulcer with a radiating incision. This evacuates the pus in the anterior chamber, and often in the case of corneal abscess brings away a small slough. The relief is usually very marked.

9. *Anterior Staphyloma*.—Abscission is our usual operation. I have never seen it followed by sympathetic ophthalmitis. A rapid operation with continuous irrigation and free use of iodoform usually gives excellent results. Of 88 only one case suppurated.

10. *Miscellaneous*.—This includes a variety of operations for papillomata, polypoid growths, ectropion, symblepharon, deformities of the lids, foreign bodies, strabismus, paracentesis, sclerotomy for glaucoma, &c., which do not require special notice.

The following articles and papers have been published by us on eye diseases :—

Intraocular Irrigation. By Mr. A. Neve, F.R.C.S.E. *Indian Medical Gazette*, 1889.

Eight Years' Surgical Work on the Eye. By Mr. E. F. Neve. *Indian Medical Record*, 1890.

Remarks on Diabetic Cataract. *Indian Medical Record*, 1891.

An Analysis of 200 cases of Cataract Extraction. *Edinburgh Medical Journal*, 1894.

Remarks on the Surgical Treatment of Cataract based on seven hundred and thirty cases of extraction. *British Medical Journal*, Vol. II, 1898.

THE SERUM TREATMENT OF LEPROSY.

BY W. A. LEE,

LIEUT.-COLONEL, I.M.S.,

Superintendent, Government Leper Hospital, Madras.

The advocates of this method of treatment are Dr. Carrasquilla, of Bogota, and Dr. Olaya Laverde, of Bucadramanga, Columbia. The anti-leprosus serum of the former was at first made by injecting horses with the serum drawn from a leper, and the prepared horse serum was then given hypodermically; but he now claims to have successfully cultivated the lepra bacillus, with filtrates, from the culture of which horses are injected and their serum used for the treatment.

Remarkably good results have been claimed from its use. Each injection is said to produce hyper-secretion from the skin and mucus membranes, and it is alleged that the nodules either become absorbed or undergo softening and cicatrisation, while the return of sensation in an anaesthetic patch was observed on one occasion. Buzzi, of Berlin, reported favourably of its use in one case, in which injections varying from 0.3 to 3.25 cubic centimetres were given in the space of four months. They caused pain but no suppuration and were followed by a rise of temperature ranging from 102° to 104°. Similar changes to those above described were noted in the tubercles, and ulcers healed, and weight was gained. Hallopeau, of Paris, also tried the serum but reported unfavourably on its use. He referred to the difficulty of drawing conclusions as to the effect of any remedy owing to the changes that naturally occur during the progress of the disease, exacerbations being followed by periods of spontaneous amelioration, often with such regression to all outward appearance as to simulate a cure. Hence any treatment employed during an exacerbation may have ascribed to it the amelioration which subsequently follows; while that pursued during the regressive stage may be wrongly credited with the spontaneous improvement, which is a phase of the malady. A really curative method of treatment ought to prolong the regressive periods as well as curtail the exacerbations, and these requirements are, he contends, not satisfactorily fulfilled by the Carrasquilla treatment.

In Laverde's method the horses employed receive subcutaneous injections of fluid from leprosus nodules, which have been recently excised from patients in an active stage of the disease. The animals always display a well-marked reaction which passes off after five or six days, and after they have fully recovered from this, blood is drawn from them with antiseptic precautions, and the serum injected in the ordinary way. Each injection is followed by a reaction which commences six hours subsequently and lasts from

twelve hours to six days, terminating in copious diaphoresis attended with a general feeling of well-being. The therapeutic effects are said to be marked and to extend to all the symptoms; anaesthesia and joint pains disappear, ocular inflammations heal, ozæna ceases, and nasal respiration is restored; nodules are absorbed, extensive ulcers heal, hair grows afresh on the scalp, skin, and eyebrows; and bacilli, which could formerly be found with ease in the parts of the skin infiltrated with leprous nodules, disappear. The treatment occupies from three to twelve months, and its good effects are said to have been maintained in several cases for upwards of a year. Laverde read a paper on this treatment at the Berlin International Leprosy Conference in 1897, where the general opinion entertained of it was that amelioration of the symptoms had followed its application but that an actual cure had not yet been obtained.

In 1899 the well-known chemist, E. Merck, of Darmstadt, sent a small quantity of his leprosy-antitoxin to this hospital in the desire, as he expressed it, of adding his mite towards a noble and great work of scientific progress. He did not describe the origin of the toxin from which he had prepared the serum, but mentioned that his present source of it had unfortunately become exhausted. In Merck's Annual Report for 1898, the experience of Dr. Grunfeld, of Rostow, is quoted as confirming the observations of Buzzi and Carrasquilla. His experiments were carried on for six months, and it was noted that no inconvenience was caused by the injections, and that oedema retrogressed and ulcers healed, while the improved condition was maintained up to the date of the publication of the observations several months later. The dose of this serum which is labelled "Lepraserum nach Carrasquilla" was 2 c.c. in the beginning, gradually increased to 9 c.c. I have found this same serum of remarkable efficacy in those malignant cases, fortunately rare, of tubercular leprosy, where fresh nodular eruptions appear at frequent intervals and grow luxuriantly, forming diffuse, smooth, shiny infiltrations on the face and ears, their eruption being attended with a temperature ranging from 102° to 104°. Only two such cases have been met with in the past six months in this institution, and each was injected with the contents of a phial of the serum, equal to 9 c.c., with the result that fever quickly abated, and the tubercular infiltrations in the more severe case completely and rapidly disappeared, leaving the skin shrunken, flabby, and minutely wrinkled. This patient's improvement has now been maintained for three months, and he has gained weight and strength. In the other and milder case, the nodules did not disappear so completely, but fever ceased and health steadily improved. The use of the serum in stationary cases unattended with febrile exacerbations or new nodular

formations has not been productive of any marked improvement, nor did it cause any febrile reaction, but it is possible that experience may show it to possess a retarding effect on the progressive visceral degenerations that keep pace with the superficial lesions; and in that case it will satisfy the requirements of Hallopeau in respect to its remedial powers: but, at any rate, it places in our possession a means for the relief of those severe symptoms which have hitherto baffled our therapeutic resources.

In anaesthetic leprosy it is doubtful if any special therapeusis is necessary or called for. In this form patients are not suffering from the disease itself, which is after a few years permanently arrested or in complete abeyance, but from its results, such as ulcers and mutilations of the extremities, due to trophic changes, the consequence of specific leprous neuritis. The discharges from such sores are free from bacilli, which are, however, occasionally found in the nose alone associated with specific forms of rhinitis; and even this condition may ultimately undergo a cure, so that the patient may with safety be allowed to mingle with the public.

It has been suggested by critics of the serum treatment, who have obtained only negative results from its exhibition, that the advantages claimed from its use, *viz.*, the involution of lepromata, can be equally well obtained from the use of proteins, albumoses, or other albumin derivatives, *e.g.*, a watery extract of pure culture of bacillus pyocaneus, injections of which excited marked febrile reaction in tuberculous and leprous patients only. This may be so, for in an experiment made with a bacillary protein, *viz.*, Haffkine's prophylactic, on a nodular leper child, the usual reaction followed, and no fresh tubercles have appeared for nearly two years; but, as my observations show, a febrile reaction is not necessarily occasioned by the Carrasquilla serum, nor is it essential for the production of its specific effects.

I send these incomplete observations in the hope that they may lead to a trial of the remedy on an extended scale, and that should equal success be obtained in other hands, an attempt may be made to produce the serum in this country.

TWO CASES OF HEPATIC ABSCESS ; WITH CLINICAL REMARKS.*

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THE following cases, which recently occurred in the Royal Victoria Hospital, Netley, illustrate several important points in the natural history,

* Sent for publication from A. M. D. Report for 1898.

diagnosis and treatment of abscess of the liver. Case No. 1.—*Hepatic abscess evacuating through right lung; repeated explorations; signs of rupture into right pleura; drainage; secondary hemorrhage; death.*

Sergeant-Farrier J. E. H., 11th Hussars, at. twenty-seven; service—home $3\frac{1}{2}$, Indian (Punjab) $5\frac{3}{4}$, total $8\frac{1}{2}$; invalidated 17th January, 1898; left India 6th March, 1898; admitted Netley, 29th March, 1898. Character, regular and exemplary.

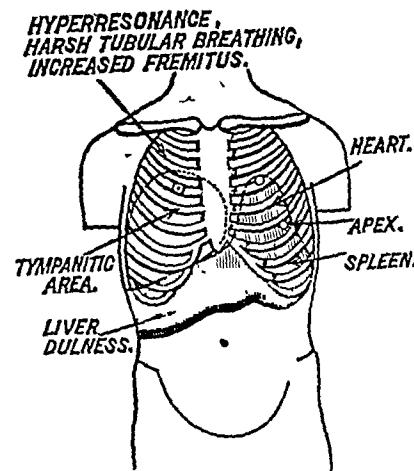
His medical history sheet does not indicate any important illness until November, 1896, when, at Sialkot, he was admitted into hospital for a smart attack of ague which detained him for seventeen days. He suffered from diarrhoea in the same station and year, but the symptoms were not so severe as to compel him to report himself sick. On the 24th of July, 1897, he was admitted at Sialkot for pneumonia affecting the lower lobe of the right lung, and was discharged to duty after nineteen days' detention. His regiment being ordered to the front, he marched to Rawal Pindi, and there received orders to shoe the horses' hind feet. He received some blows on the right side while executing this duty, which were followed by pain, and a few days afterwards, whilst at work, he suddenly spat up about a quart of blood and pus. This eased his pain, and he continued to work for a week, when, the spitting persisting, he sought admission into hospital on the 4th of October 1897. His case was diagnosed to be a hepatic abscess, evacuating through the lung. He admitted at this time having been in the habit of occasionally drinking hard. The symptoms subsided and expectoration ceased, and he was discharged to duty on the 24th of October. In November he had a return of pain in the right side accompanied by fever, and on the 20th of that month profuse expectoration of purulent matter took place. This has persisted since that time.

On admission, at Netley, he was found to be very emaciated and anaemic. He spat up large quantities of foetid chocolate-coloured material and suffered from fever of a hectic type. On seven occasions his liver was explored by means of an aspirator at different situations and levels; but no indications of pus were discovered. The last exploration, high up, drew some clear serous fluid which was judged to have come from the cavity of the right pleura.

On the 4th of October 1898, Mr. Curme made a careful physical examination with the following results:—Heart displaced, somewhat downwards and outwards; lower two-thirds of right lung absolutely dull in front and behind, with suppressed resonance and fremitus and respiratory sounds; left lung hyper-resonant with puerile respiration; expectorating between three and four pints a day of chocolate-coloured

viscid fluid containing pus and mucus, and very foetid; breathing shallow and hurried; pulse small, soft, and rapid; liver dulness extends about two inches below costal arch; temperature from 100° to 101° F. During the 5th, 6th, and 7th, his condition underwent no change. On the 8th there was a suppression of expectoration up to 12 noon, and free emission of the usual material afterwards. On the 9th, the expectoration was scanty, clear, and mucopurulent; temperature higher; dyspnoea; pulse smaller and more rapid.

On the 10th, expectoration still scanty and clear; dyspnoea and palpitation distressing; aching pain over right side. Heart greatly displaced to left; apex beat in 6th interspace, $3\frac{1}{2}$ inches below nipple and 2 inches external to it, action tumultuous, impulse and sounds diffused, pulse 126. Liver dulness extends to near level of umbilicus; spleen enlarged. Tympanitic resonance from second to sixth rib anteriorly, extending to mid axillary line laterally; absolute dulness over rest of lung posteriorly; level of dulness altered by changing position. Resonance and vocal fremitus exaggerated superiorly, suppressed inferiorly; respiration harsh at apex, faint and distant or absent elsewhere. Left lung the same as before, respirations 88, shallow. The accompanying diagram indicates roughly the conditions observed on the 10th of October, from which, in conjunction with the general symptoms,



the inference was drawn that the abscess had broken into the right pleura, the lower two-thirds of the cavity being filled with pus and air, and the upper third shut off by adhesions. Direct drainage through the chest wall was, therefore, deemed advisable to relieve symptoms and permit of free discharge of pus and obliteration of the abscess cavity. Accordingly, the patient was transferred to the surgical division, and on the 11th, Major Dick, after the man had been anaesthetised with chloroform, introduced an aspirator needle for the purpose of exploration, through the 7th interspace in the mid axillary line. After the instrument had entered about an inch and a half, a free discharge of grumous foetid pus took place. A free incision was made and an inch of the

seventh rib removed. Large quantities of dark brown material flowed forth. The finger entered a spacious cavity, with smooth irregular walls; but no aperture in the diaphragm could be detected. The later discharge was thicker and more like liver pus. Two large drainage tubes were inserted, and a voluminous antiseptic dressing applied. It was observed after the operation that both heart and liver had resumed their natural positions.

The operation was followed by decided relief. The temperature fell, the breathing became easier and heart's action steadier. The patient was able to sleep, and felt altogether much more comfortable. The discharge continued for a few days to be very copious and putrid, but became on the 14th less grumous and fetid. He had a slight attack of diarrhoea on the 17th and 18th which was checked by opium and astringents. On the 18th he had a subnormal temperature, and on the 19th there was pain in the right side, and no discharge on the dressings. The tubes were withdrawn and found to be blocked with slough. They were cleared and reintroduced without trouble. Shortly after haemorrhage set in, which proved quickly fatal.

A post-mortem examination was performed on the 21st by Captain Lamb, I.M.S., who kindly supplied the following notes:—*Rigor mortis* well marked; body fairly well nourished; a wound $1\frac{1}{2}$ inches long on right side of chest in mid axillary line, corresponding to 7th interspace. On opening the thorax, *right lung* found to be adherent to the pericardium to a slight extent, and for a considerable distance around the above-mentioned wound there are strong fibrinous adhesions; on breaking these down a large cavity is opened involving the lower lobe of the lung; this is full of blood-stained pus, with a considerable amount of clot and broken-down lung; the cavity involves the whole of the lower lobe of the lung; the upper part of the pleural cavity completely shut off by strong fibrinous adhesions.

Left lung and pleura healthy.

Pericardium contains about $2\frac{1}{2}$ ozs. of clear fluid; the *heart* is somewhat flabby, but otherwise healthy. The upper surface of the right lobe of the *liver*, the diaphragm over this, and the inferior surface of the lower lobe of the right lung is firmly adherent together. On cutting into the liver towards the upper and back surface of the right lobe, an abscess cavity about the size of a tangerine orange is opened into; it is full of inspissated thick pus which is neither bile nor blood-stained; the cavity is limited all round by a very thick membrane, honeycombed on its inner surface. Between this cavity and the thickened layer which binds the lung and liver so firmly together, a thin layer of liver tissue can be dissected off, and no communication of any kind is detected between this cavity

and the cavity of the lung. The lung cavity, as previously mentioned, involves the whole of the lower lobe; its walls are rugged and numerous; bronchioles open into it; no opening into any artery can be detected. Liver generally is slightly enlarged, pale and mottled.

Spleen is very dark and considerably enlarged.

Kidneys healthy.

Intestines. No ulcer or cicatrix is found in either small or large gut.

Case No. 2.—*Enteric fever; right pleuro-pneumonia; evacuation of 24 ozs. of serum from right chest; rupture of hepatic abscess into right pleura; death.*

Private C. R., R. I. Fusiliers, at 22; service—home $2\frac{1}{2}$; foreign (Egypt) $\frac{1}{2}$; total, three years. Invalided from Alexandria, 1898. Admitted 20th September, into Netley Hospital 3rd October, 1898.

He was admitted into hospital from the Mustapha Barracks on the 15th of July, 1898. His case was diagnosed as enteric fever, which is reported to have run a prolonged course "with the usual symptoms." He was greatly debilitated. He improved slightly on the voyage home, but complained of pain in the right side.

On admission, he suffered from cough, pain in upper part of right chest and tenderness in right groin. He was very weak and emaciated. On examination the right chest was found to be dull to percussion below the level of the nipple in front and behind. Left lung hyper-resonant. Heart displaced downwards and outwards. Liver dulness extended about two inches below costal margin. Sputum copious of a chocolate-brown colour, viscid and almost odourless. Temperature of a hectic type. Diarrhoea troublesome. On the 9th of October, the signs pointing to pleuritic effusion, the right chest was aspirated by Major Dick in consultation with Lieutenant-Colonel Webb, and 24 ozs. of clear, straw-coloured fluid were removed.

The operation was followed by considerable relief, but the tenderness of lower chest and right groin persisted. On the 13th of October, it was noticed that the cough was not so troublesome and that the character of the expectoration had altered—had become clearer and lost its brown tinge. On the 17th, pain in the hepatic region was acute, and some blood was passed with the stool, the diarrhoea continuing. On the 21st, a decided change for the worse occurred. The hepatic tenderness was more marked, and the liver dulness had descended. There was also some oedema of the hepatic area, and the sputum had resumed its previous character. Abscess of the liver was now suspected, and exploration proposed; but the patient firmly resisted any operative interference. His condition grew

rapidly worse, and he sank of exhaustion on the morning of the 23rd of October.

A post mortem examination was performed on the forenoon of the 26th by Captain Lamb, from whose notes the following facts are abstracted:—

External appearances.—*Rigor mortis* gone; body fairly well nourished; considerable bulging of right side of chest which is absolutely dull on percussion from the clavicle to below the costal margin.

Thorax.—On opening right thorax, a large quantity of dark purulent matter escapes; the right pleural cavity is distended with this material. Right lung completely collapsed and pushed to the back of the cavity which communicates by an opening in the diaphragm, about the size of a crown piece, with a large cavity in the right lobe of the liver. The wall of the pleural cavity is irregular and ragged, and is partly constituted by the middle lobe of the lung, which is deeply excavated, several bronchioles opening into the cavity; pleural membrane thickened. Upper and lower lobes collapsed and flattened and sink in water.

Left pleura free from adhesion; lung slightly oedematous. Pericardium contains fluid; heart pale and flabby, otherwise healthy.

Abdomen.—Liver considerably displaced downwards; right lobe excavated by a large abscess cavity about the size of a child's head at birth, and full of dark grumous pus. Liver tissue fatty and congested (nutmeg liver). A small abscess in left lobe near the upper surface, about the size of a pea. Spleen and kidneys normal.

A considerable number of ulcers are found in the caecum and ascending colon; they vary in size from a pea to a florin, are raised and floored for the most part with irregular sloughs. They vary, in shape, some being circular and others oval. Some solitary glands in their neighbourhood are observed to be swollen. Peritoneal surface opposite ulcers, dull and thickened. No ulcers or cicatrices in small intestine or other portions of large intestine.

REMARKS.

These two cases occurring, as often happens in hospital experience, at the same time, illustrate some interesting points and raise some useful practical questions in relation to the spontaneous evacuation of hepatic abscesses through the lung, and the proper management of such cases under various contingencies, which may be dealt with under the following heads:—

1. *The situation of the abscesses.*—In both cases the cavities occupied the upper and back part of the right lobe adjoining the fissure for the vena cava. This is the usual site in such cases, and offers less resistance upwards than in any other direction. This position also accounts for the difficulty experienced in finding the

abscess with an exploring instrument, either from the front or side; also for the absence of signs, such as fulness, fluctuation, circumscribed tenderness, intercostal bulging, or oedema, which exist in liver abscesses which lie closer to the surface.

2. *The preliminary processes.*—These are phrenic and pleuritic to start with—first inflammatory and then destructive. The circumferential adhesions are the protective outer zone of a process whose centre is necrotic. During this stage, the symptoms are thoracic rather than hepatic and pleuritic rather than pulmonary. In both cases an extension of pleurisy in milder form affected that portion of the membrane which had been shut off from the abscess cavity by adhesions, resulting in serous effusion into the pleura—slight in case No. 1, and copious in case No. 2; so copious, indeed, in the latter case, as to mask the real and more important disease. This possibility of occurrence of serous effusion into the general cavity is a clinical fact of importance to be held in view. The signs and symptoms indicating the existence of these preliminary processes are pain in the region of the diaphragm, sometimes of a very acute character, extension of liver dulness upwards, painful catching on deep inspiration, dry cough, fixation of right chest and friction over the base of the right lung.

3. *The Secondary Abscess.*—Whenever a liver abscess seeks a distant point of discharge, it is by means of formation of secondary abscess that the object is sought to be accomplished. Such abscesses occur in the epigastrium, hypochondrium, chest wall or loins, and they simulate parietal abscess, and are perhaps opened as such. The peculiar character of the pus reveals their true character, and on exploration with the finger, a more or less contracted aperture is found, admitting entrance into the liver cavity, unless, as may happen, this has been shut off. In evacuation into stomach, duodenum, colon, peritoneum, pleura or pericardium, such secondary abscesses are not formed. In cases of evacuation through the lung, cavities are excavated in that organ, either by irruption as in case No. 1, or erosion as in case No. 2. The lower lobe is the usual seat of the destructive process which opens the bronchioles and gives exit to the discharge. In case No. 2 the middle lobe was the portion implicated. The abscess had climbed up along the right side of the pericardium, and the eroded lobe formed its outer wall. Indications of gangrenous destruction of the lung substance were evident in both cases, and what remained of the lobe in both was compressed and consolidated. Why it is that in some instances complete and rapid evacuation is accomplished, and in others the process is delayed or fails to be completed until death by exhaustion occurs, it is not easy to conjecture. The

first case is an illustration of apparently complete evacuation in a short time, and then, after a period of apparent convalescence, recurrence of the symptoms. This is not an uncommon history, and the period of intermission may be a prolonged one. Sometimes it looks as if a second abscess of the liver had formed, and was seeking exit by the old route; but probably in most cases the event is due to fresh accumulation in the old cavity. In either event the original symptoms of fever, pain and weight in the side, &c., are reproduced.

4. *Irruption into the pleural cavity.*—In some instances this event is primary, in others secondary. In case No. 2 it was undoubtedly the latter—must have occurred between the period of aspiration and death. Perhaps the removal of the pleuritic effusion, by altering the balance of pressure, caused or conduced to the rupture of the membrane separating the pleural from the abscess cavity. There was no indication of the accident, and in case No. 1, there were indications which appeared to be very positive and convincing; but they were due to acute distension of the lung cavity with pus and air, owing probably to failing expulsive power. Whether the filling of the pleural cavity with the products of hepatic and pulmonary destructive suppuration be primary or secondary, there can be no hesitation regarding the immediate necessity of making a free opening in the parietes (including resection of a rib or ribs) and establishing free and direct drainage. I have seen recovery take place in very desperate cases of this nature.

5. *The reparative process in the liver.*—In case No. 1, this was advanced; the communication between lung and liver had been obliterated; the abscess cavity had been encysted; its wall thickened; its contents degenerated and converted into a fatty emulsion which would in time have become caseated and then cetrified. The pathological struggle had been transferred to the chest. In case No. 2, indications of reparative change also existed; the abscess wall was thick and globular, shutting out the cavity from the liver substance, which was no longer being broken up: the walls were lined with lymph, and progressive organisation and contraction of the cicatricial material would, no doubt, had the man lived, have accomplished the shrinking, and more or less complete obliteration of the liver abscess. There also the burden of morbid activity had been translated to the cavity of the right chest.

6. *The diagnosis.*—The history in both cases was obscure. In No. 1 the abscess of the liver must have been in existence—latent or concealed—until the events of October 1897 disclosed its existence. The diagnosis of rupture into the pleural cavity was wrong, but the physical signs and general symptoms pointed to that accident.

The treatment adopted was, however, correct. In No. 2 it is more than doubtful that the man ever suffered from enteric fever. The conditions found after death must have taken a considerable time for their development, and the pyrexia, combined with the caecal lesions, must have closely simulated enteric. The acute pleurisy farther masked the abscess, until shortly before death, when the true nature of the case was recognised. An exploratory puncture through the chest wall would then, if permitted, have fully confirmed suspicions and led to the only practice which offered any hope or possibility of cure. The existence of an incipient abscess in the left lobe of the liver might, and probably would, have thwarted recovery even if removal of the morbid material had been procured by a free drainage opening.

7. *Cacal dysentery.*—Case No. 2 was a typical example of a dysenteric process, affecting mainly the solitary glands, confined exclusively to the caecum. In these cases, the classical symptoms of dysentery—tormina, tenesmus, colic, thickening, angina and frequent scanty discharges of blood and mucus are apt to be suppressed, and those of enteric fever simulated. The lesions in the caecum were of long standing and may have preceded the hepatic lesion.

8. *The lesson to be learned.*—The question suggested by these cases is—whether exploration of liver abscesses seeking vent through the lungs should not be made above, rather than below, the diaphragm. I have seen so many failures to hit the liver abscess by exploration from below, through the substance of the liver, that I am inclined to think that a cautious search along the convexity of the diaphragm would be a safer and more successful proceeding. The general cavity of the pleura is in this situation shut off by adhesions, and the route of approach indicated would also be the best route for drainage in the event of the cavity being broached. The exploration might be made by the aspirator needle introduced through the 7th interspace and pushed directly inwards, or by incision through the same interspace and subsequent use of the finger or director or a straight catheter.

ON THE METAMORPHOSIS OF THE FILARIA NOCTURNA IN MOS- QUITOS OF THE ANOPHELES GENUS.

BY S. P. JAMES, M.B. (LOND.),
CAPTAIN, I.M.S.
Quilon, Travancore.

THE difficulty of keeping mosquitos alive in confinement for any length of time, has, since the first discovery by Manson of the metamorphosis of the Filaria Nocturna in this insect, prevented until lately the confirmation of his discovery. Recently, however, Dr. Bancroft in

Australia has, by feeding a species of the *culex* genus of mosquito (*Culex Ciliaris*) on bananas, kept them alive for many days and has shown that, in this variety of mosquito, the metamorphosis of the *Filaria Nocturna*, described by Manson, takes from seventeen to twenty days for its accomplishment. Dr. Manson in his original papers stated that, in the mosquito with which he experimented (also a species of *culex*), the metamorphosis was effected in seven days, but, as he employed mosquitos which may have fed on a filariated person several times before they fed on the particular man's blood with whom he was experimenting, it is obvious that the filariae which he considered were seven days' old filariae, may have been much older than this, and therefore his limit of seven days may be too short.

It is however certain that temperature, food, and surroundings have a great influence on the time which parasites take to develop in their intermediary hosts, and, as it is probable that several different kinds of mosquitos are efficient intermediary hosts for the *Filaria Nocturna*, twenty days may be as much too long for its metamorphosis in one mosquito as seven days is too short in another.

During the past year I have had many opportunities of trying to work out the metamorphosis of this parasite in various kinds of mosquitos, but until lately I have been unable to keep them alive sufficiently long to follow out the metamorphosis to its conclusion; although in two species of *culex*, some specimens of which lived for twelve days, the metamorphosis of the filariae had progressed sufficiently far to enable me to believe that, had the mosquitos lived two or three days longer, the filariae would have reached the actively moving, wriggling stage which is the final stage of their development in the mosquito.

Most of my trials during last year were with mosquitos of the *culex* genus, but in January last, a visit to Shertully in Travancore, where about 45 per cent of the inhabitants are "filariated," led me to think that mosquitos of the *anopheles* genus were probably the usual intermediary hosts of this parasite; and since that time, I have been able to work out in mosquitos of this genus the metamorphosis of the parasite from the embryonic stage, in which it enters the mosquito with the blood of the individual, to the actively moving stage, which fits it for its further development outside the mosquito's body.

The purpose of this article is not to describe in detail the various changes which the filaria undergoes in its development, but to point out that mosquitos of the *anopheles* genus are efficient hosts for the *Filaria Nocturna*, and that

it is this genus of mosquito which probably acts as its usual intermediary host.

My reasons for thinking that *anopheles* mosquitos rather than *culex* mosquitos are the usual efficient hosts of the parasite are as follows:

(1) *Anopheles* mosquitos do not bite during the day-time; their meals of blood are practically always taken during the night, i.e., when the filarial embryos are circulating in the blood, *culex* mosquitos will feed at any time.

(2) *Anopheles* mosquitos collect many more embryos in the blood which they extract than do *culex* mosquitos.

(3) The filariae appear to undergo their metamorphosis with more ease and at a quicker rate in *anopheles* mosquitos than they do in *culex*. This is evidenced by the fact that at no time during their development in *anopheles* mosquitos is motion suspended in the filariae, and, in this climate, their metamorphosis in this genus of mosquito is complete in from twelve to fourteen days.

(4) In the places in Southern India where filariasis is most common (Shertully, Alleppey, Cochin and other places in Travancore), the *anopheles* genus of mosquito is more common in houses than is the *culex* genus.

(5) The food of *anopheles* mosquitos appears to consist principally, if not entirely, of blood. I have not been able to keep them alive on bananas or other vegetable food for any length of time as can be done with *culex* mosquitos.

(6) I experimented with two species of *anopheles*. Both these I found to be efficient hosts, and it seems not improbable that other species of this genus would be found to be so.

In experimenting with this genus of mosquito, great difficulty is found in keeping them alive for the required number of days. One cannot feed them on the blood of birds or animals, as it may contain filariae other than the particular one we wish to study; and I was not able to keep them alive for more than four days on bananas.

The following is the plan which I adopted:—A number of the mosquitos, bred from larvae, were liberated under the mosquito curtains of the bed in which the filariated man slept. The next morning those which had fed were caught and placed in glass bottles in which a banana was hung. In the evening they were again liberated under the curtains and allowed to have a second meal of filariated blood. On the third evening this was repeated, so that each mosquito received three meals of filariated blood. On the third morning they were caught and placed in the bottles as usual, and taken to my bungalow, where the same method of feeding them was carried out each night, with this difference; that instead of their feeding on filarial blood, they were liberated each night under my own mosquito curtains and so obtained a meal.

* Vide article by the author in *The Indian Medical Gazette*, March, 1900.

of ordinary blood. I continued feeding them thus until the tenth day, examining one or two each day to ascertain the progress which was being made. After the tenth day they were kept in the bottles with bananas until they died. None lived beyond the fifteenth day but even in those which died on the twelfth and thirteenth days, actively moving filariae were present, similar in every way to those present in the bodies of the fourteenth, and fifteenth, day mosquitos.

It has been suggested that "young filariae may gain entrance to the human host whilst mosquitos bearing them are in the act of biting" (Bancroft). In order to avoid the possibility of such an event happening to myself, I was careful not to sleep under the curtains with the filaria-carrying mosquitos after the tenth day, by which time the filariae had not arrived at a sufficiently advanced stage to make infection by them in this manner possible.

In view of the following facts, however, I do not consider this method of infection to be at any rate of frequent occurrence. One of the sepoys of the native regiment stationed here became infected with filariasis many years ago in Cuttack. He has now been married for ten years and has lived continuously with his wife and two children in a small one-roomed hut, which has also no doubt during that time been the home of numerous mosquitos. Neither his wife nor either of his children however have filaria embryos in their blood. It would appear probable that if the usual mode of infection of this disease were by the bites of filariae-bearing mosquitos, this man's wife and children would by this time in all probability have filariae in their blood. Owing to the absence in South Africa of Mr. Austen of the British Museum, to whom I have sent specimens of the mosquitos with which I experimented for identification, I have not yet been able to ascertain the specific names of the two species of *anopheles* mentioned in this paper.

THE ÆTILOGY OF GOITRE.

By F. A. L. HAMMOND,

CAPTAIN, I.M.S.

It is perhaps as well to own at the commencement that so far nothing definite has been ascertained with regard to the ætiology of goitre. At present the points on which authorities are agreed are:—

- (1) That goitre is endemic in certain localities;
- (2) that it is of more frequent occurrence in women than men;
- (3) that there is apparently in some cases a hereditary tendency;
- (4) that it is often connected with anaemia, especially during menstruation and in pregnancy (but whether as cause or effect is doubtful).

The following cases are interesting, although they apparently throw no fresh light on this obscure question.

During the month of July ten men came to the Regimental hospital, 12th B. N. I., suffering from goitre. One man also came in the following September. They had all been out "on column" with the Northern Party of the China Boundary Commission Escort, which left Bhano in the beginning of December 1898 and returned towards the end of May 1899, so that they had spent five or six months in the Cachin Hills.

The points of interest to note in these cases with regard to the ætiology of this disease are that:—

(1) They were all Mussalmans, although the Escort was composed equally of Mussalmans and Sikhs (229 of the former to 227 of the latter). The only difference in the conditions under which they lived was that the Mussalmans ate beef when obtainable and smoked tobacco; whereas the Sikhs did neither, and were provided with a ration of two ounces of rum daily.

Of the eleven men, five were Pathans and six were Panjabi Mussalmans. Six came from hill tracts in the Panjab, whereas the other five were from the lowland country.

(2) None of these men had suffered from goitre previously, and on careful enquiry there was no history of any case having occurred in any of their families.

(3) Goitre is endemic in the Cachin Hills, in fact, it is a rare thing to see a Cachin woman without a goitre.

(4) Goitre is not common in this battalion: these are the only cases I have seen during nearly a year spent with the regiment, though I believe that occasionally recruits have been known to arrive showing signs of goitre, as a slight amount is not considered a bar to enlistment.

(5) The symptoms rapidly subsided on removal to a place in which the disease was not prevalent. It may therefore, I think, be taken for granted that these cases of goitre arose *de novo*, owing to the residence of the men in a locality where the disease was endemic. It would be interesting to know if the freedom of the Sikhs from attack was due to coincidence merely, or whether to some natural immunity, or to the fact of their drinking rum (and, perhaps, by this means neutralising some exciting cause existing in the drinking water).

The disease was gradual in its onset, the first case not occurring till two months after the return of the Escort. The men's attention was first directed to the swelling by the increasing difficulty they found in fastening the collars of their tunics. In some of the cases the enlargement of the gland was well marked, and it was difficult to understand why they had not noticed it before, except for the fact that

they are an unobservant set of people, and were probably quite content so long as it gave them no pain, and they were able to fasten their tunics.

None of the cases showed any traces of the swelling being cystic, and in only one case (No. 4) were there any pressure symptoms. Nearly every case showed localised swelling of one or other lobes of the gland, and in each case the isthmus was enlarged.

The swellings rapidly subsided, a result in all probability due more to the removal of the exciting cause than to the effects of treatment.

They were ordered, on purely empirical grounds:

| | |
|---------------------|--------------------------|
| R. Pot. Iodidi ... | ... gr. 5 |
| Liq. Arsenicalis .. | ... m. iij |
| Tinct. Calumbæ .. | ... m xv |
| Aq. Chlor. ... | ... ad. 3 <i>i</i> t. d. |

Tinct. iodi was also painted over the goitre.

Appended is a list showing the circumference of the neck—at the most prominent point of the swelling—at different periods. The measurements are not of much value, except as a rough guide, as in some cases the growth was strictly localised; but a diminution of an inch, or even half an inch, in the girth of the neck means as a rule considerable decrease in the size of the

goitre, although this might not at first be apparent to sight and touch.

Two of the cases, Nos. 9 and 11, persisted for some time and were given, in addition to the above treatment, tabloids thyroid extract, grs. v. bis. die. These cases also by Christmas time showed considerable improvement and were practically well. Arguing from our knowledge of the climatic condition of places where goitre is endemic, I should hazard the opinion that the enlargement of the gland is due to the ingestion (probably in the drinking water) of an organism of the protozoon type, which apparently needs for its active development of cool temperature and the peculiar surroundings afforded by those sides of the hill valleys which are practically in constant shade, but this is mere conjecture.

With regard to the administration of thyroid extract I have tried it on a few cases with apparently little beneficial effect, certainly with not more than is usually obtained from large doses of iodide of potassium. In the Medical Annual of 1899 two cases are quoted in which its administration has been successful in children, and Osler cites Duchesne as having cured nine cases. I hope, in view of the abundance of material, to still further test the efficacy of this treatment.

| Serial No. | Names. | Caste. | SIZE OF NECK ON DIFFERENT DATES. | | | | | | | | REMARKS. |
|------------|--------------|-------------------|----------------------------------|----------|---------|----------|----------|----------|-----------|-----------|---|
| | | | 14-8-99. | 23-8-99. | 3-9-99. | 17-9-99. | 24-9-99. | 8-10-99. | 15-10-99. | 12-11-99. | |
| 1 | Nek Mohamad | Punjabi Mussalman | 15 | 14½ | 14½ | 14½ | ... | ... | ... | ... | 14 |
| 2 | Nizam Din | Pathan | 13½ | 14 | 13½ | 13½ | 13½ | ... | ... | ... | 13½ |
| 3 | Mohd. Aslam | Do. | 16½ | 16½ | 15½ | 15½ | 15½ | ... | ... | ... | 15½ |
| 4 | Ghulab Din | P. M. | 15 | 14½ | 14 | 14½ | ... | ... | ... | ... | 13½ |
| 5 | Fazal Khan | Do. | 13½ | 14 | 14 | 13½ | ... | ... | ... | ... | 13½ |
| 6 | Karam Sher | Do. | 14½ | 15 | 15 | 14½ | ... | ... | ... | ... | 14½ |
| 7 | Ibrahim Khan | Pathan | 13½ | 14½ | 14 | ... | ... | ... | ... | ... | 13½ |
| 8 | Fazal Din | P. M. | 13½ | 14 | 14½ | ... | ... | ... | ... | ... | 13½ |
| 9 | Sahib Rahman | Pathan | 14½ | 15 | 15 | 14½ | 14½ | 14½ | 14 | 14½ | A very thin emaciated looking man, with very prominent thyroid cartilage. |
| 10 | Sikander | P. M. | 14 | ... | ... | ... | ... | ... | ... | ... | |
| 11 | Syed Mohd. | Pathan | ... | ... | ... | ... | ... | 14½ | 13½ | 14½ | 14½ |

FURTHER RESEARCHES ON OLUTKOMBOL IN DYSMENORRHœA.

BY DR. B. M. SIRCAR, L.M.S.,

Calcutta.

FOURTY years ago I first came to know the medicinal properties of this indigenous plant as a good emmenagogue in menstrual disorders. *Abroma Angustum* or *Olutkombol* belongs to the Natural Order *Byttneriaceæ* (Nat. Order 32, Balfour), and is known in botany as a fibre-

yielding plant. It is a large spreading shrub found in the more tropical parts of India. The officinal part of the plant is the fresh viscid sap, which abounds in the thick easily-separable bark of the root and is insoluble in water.

After making ample experiments of the drug for about twelve years in hundreds of cases of dysmenorrhœa and being convinced of its marvellous curative effects, I wrote an article about it, which was published in the July number of 1872 of the *Indian Medical Gazette*, page 153,

with a view to bring it to the notice of the profession and invite further experiments. The article attracted the attention of medical men, and Dr. T. E. Charles, the then Obstetric Physician of the Medical College Hospital, who felt the want of such a medicine, at once communicated with me and used it freely among his hospital and other patients with much success. The late Dr. D. B. Smith also took a great interest in the medicine and tried to bring it into a more acceptable form as a tincture, but this did not prove so successful as the fresh sap. Many other practitioners in different parts of the country experimented on the drug, and I remember the names of Dr. B. Evers, of Wardha, Dr. F. H. Thornton, of Monghyr, Dr. K. McLeod, of Gya, and many others who used the medicine with benefit to their patients.

Dr. Kanny Lall Dey, who used the medicine, has noticed it in his work on the Indigenous Drugs of India as an emmenagogue, valuable in dysmenorrhœa.

Dr. G. Watt in his valuable Dictionary of the Economic Products of India has given a full description of the plant, embodying the opinions of several medical men who have experimented on it to which readers are referred.

Forty years' continuous experiment of the drug in thousands of cases of dysmenorrhœa and other menstrual disorders with such brilliant results may be sufficient excuse for me to write again on the subject, giving my own researches, as well as the opinions of others, who have used it. In my first article, I have already given the history, botany and the physiological action of the medicine in the several varieties of dysmenorrhœa, in ensuring a permanent cure and restoring to the uterus its normal function of fecundation.

I have generally used the medicine during the period of the menses, commencing from two days before its appearance (when the pain precedes the flow), three days during the flow and two days after its cessation. In case of no premonitory pains, the medicine is given from the first day of the flow for seven days successively with equally good results.

A single administration during the menses generally cures the disease and brings on conception in young married women. The younger the patient and severer the pain, the greater is the chance of success by a single administration. In successful cases the patient is not only cured of the pain, but if married, no menstruation appears at the next catamenial period and conception follows, owing to the removal of the pain, which caused obstruction to the function. This happy restoration of the function of reproduction leads many a barren woman to resort to this medicine, but not unoften with disappointment, as the medicine removes the sterile condition of the uterus, only in those cases

caused by dysmenorrhœa. When one administration fails and the menstruation appears on the next month as usual, with or without pain, the medicine should be repeated in two or three courses as the case may require, to bring on conception, which determines the permanency of the cure.

The action of the medicine is efficacious, both in the congestive and neuralgic varieties of the disease, or in the admixture of both these forms, but it has no action on the mechanical variety or in organic lesions of the uterus. The action is more prompt and effective in the congestive than any other form.

The curative action of the medicine is now so well established that it has become a favourite remedy both amongst the Native and European ladies all over India in dysmenorrhœa, which almost invariably stands in the way of conception, and hence this disease is popularly known in this country as *Badhuk Bedna*, which means a pain obstructing conception.

Attempts have been made to administer the drug in the more acceptable forms of tincture, pill or powder, but none prove so efficacious as the fresh viscid sap in substance in which form I have used it with wonderful results.

Menstrual disorders and notably the varieties of dysmenorrhœa are very prevalent in this country, and it seems nature has supplied it with a simple efficacious medicine by endowing the roots of an indigenous plant with such singular virtues. It is noteworthy that the roots branch out in numerous tender offshoots, superficially under the ground and can be easily taken out in abundance.

Such being the medicinal properties of this indigenous plant, I think it should find a place in our *materia medica* as one of the best emmenagogues in dysmenorrhœa.

THE DESTRUCTION OF MOSQUITOS.

By MATHEW D. O'CONNELL, M.D.,
LIEUT.-COLONEL, R.A.M.C.

II.

IN a previous paper I drew attention to minnows and lizards as natural enemies of mosquitos, and, therefore, as our allies in the campaign against anopheles.

Spiders, frogs and birds, especially the common house sparrow, are also enemies of the mosquito whose services should be gratefully acknowledged and made the most of.

Spiders have not hitherto been regarded as exactly benefactors of mankind or indeed of any other kind, even by their ardent admirers. The late Mr. Grant Allen probably voices the opinion of scientific naturalists when in his "Flash lights on Nature," he describes spiders as beasts of prey, ferocious, cruel, blood-

thirsty, shining examples of abandoned and shameless wickedness.

This beautiful web is, as all know, but a trap or snare for unwary flies. The sympathy of men is always with the miserable fly entangled in the spiders snare, rightly struggling to be free.

Thus even naturalists regard spiders as not having even one redeeming virtue, and sanitary scientists decree that their webs are to be ruthlessly swept from our dwelling-houses, and held anathema, as so much dirt. But even scientists apparently may err.

Our aversion to spiders and cobwebs in our houses, and I must admit a strong personal objection to them, must now be regarded as mere ignorant prejudice.

Pathologists have lately given to the world new views on the propagation of that scourge of mankind, malaria, which are bound to change our feelings and our attitude towards spiders and cobwebs. For, amongst the flies which spiders ensnare and eat, must be numbered mosquitos, the propagators of malaria. In the season when mosquitos most do congregate within our Indian dwelling-houses if you examine any spiders web, you will find it crowded with the remains of dead mosquitos. In past ages, this would have filled the beholders with sympathy for the murdered anopheles. But in this more enlightened century we know better. The mosquito has been found out. Science has thrown her flashlight on mosquitos, and dissected them, and now portrays them to man as his bitterest, if hitherto unrecognised, enemy, the propagator of malaria. Hence in future when you see mosquitos entangled in the spider's web they should not be regarded as rightly struggling to be free, but as cruel and relentless enemies delivered into our hands. Spiders on the other hand must henceforth be classed amongst the greatest benefactors of the human race, and their webs as the most highly valued of our household treasures. For does not science tell us that malarial fevers are caused by a parasite which is conveyed from man to man by mosquitos? And does not the spider ensnare and eat the mosquito, parasite and all?

Like the Boer, his mobility is simply disgusting. Spiders are indeed ready, far too ready some will say, to spread their webs throughout our dwelling-houses, over doorways and windows and ventilators, and wherever a mosquito might possibly gain admittance to man's abode. If not interfered with, they would soon cover all with mosquito curtains compared with which those manufactured by man are coarse clumsy and useless. Within such curtains, that one mosquito so often found within curtains made by man, could never exist. For if she but touch with the tip of her wing the spider's web, her destruction is inevitable. In curtains made

by man the mosquito may be seen seated or rather standing, and ready to take to flight at the least sign of being attacked, not being firmly caught by any such glutinous secretion as covers the spider's web.

It is indeed consoling to find that nature does something for the protection of the human species from its enemy, the malarial parasite.

Plasmodists, as each phase in the cycle of the parasites life is discovered, are accustomed to say "Behold how admirably does nature provide for the preservation of the species." It is indeed but fitting that they should wax enthusiastic at nature's maternal care for the tiny microbe. Still it must not be overlooked that in thus securing the preservation of the parasite in the struggle for existence, nature is deliberately compassing the destruction of millions of another, perhaps, not less interesting or important species, the human. For malaria claims more victims amongst mankind than any other disease. However, the action of nature in this respect may be regarded as only one more brilliant illustration of the survival of the fittest.

I have already taken up too much space in drawing attention to what every one knows, that spiders ensnare and destroy mosquitos, and hence may be of use in eradicating malarial fevers, that is, if these fevers are caused by parasites which are conveyed to man by mosquitos. This might with advantage have been compressed into two or three lines.

If spiders are of such benefit to mankind, naturalists will rejoice for even the late Mr. Grant Allen whilst claiming that spiders stand at the head of animals with jointed bodies, had but a poor opinion of their usefulness or morals.

ENTERIC FEVER IN NATIVES OF INDIA.

BY ANDREW BUCHANAN, M.A., MD.,

MAJOR, I.M.S.,

Superintendent, Central Jail, Nagpur, C.P.

(Continued from page 448 of 1899.)

CASES WITH COMPLICATIONS.

AMONG Europeans there is a slight affection of the lungs (which is usually called bronchitis) in nearly every case, and this symptom is a very constant one in natives. In 1895 there was a case in hospital in which on the tenth day crepitation resembling the crepitation of pneumonia was heard, and on the eleventh day there was rusty sputum. The patient died on the twentieth day of the disease (see Dewaji's case No. 1 Fatal case) and at the *post-mortem* it was found that, although the bases of both lungs were congested, still pieces cut from the lungs floated in water, and there was nothing like pneumonic consolidation. At that time I made the following note—"The lung symptoms were peculiar:

the crepitation indicated pneumonia and the rusty sputum seemed to confirm this. It is not certain if one finds the truly consolidated lung as in ordinary pneumonia, or if there is some special kind of inflammation in enteric fever."

In May of this year an opportunity of partially answering this question was given when Buddhoo (Case 7 of the fatal cases) died. The lung symptoms were marked in his case, and on admission the disease was entered bronchitis. A few days later dulness was found and crepitation was heard and double pneumonia was diagnosed. At the *post mortem* both bases were found to be consolidated and pieces cut from them sank in water.

CASE WITH PLEURISY.—In another case, Ithia male, age thirty-six, there was well marked pleurisy. On the tenth day the left side of the chest was extremely tender, the pleural cavity contained a large quantity of fluid, and the apex beat was to the right of the middle line. In this case the tongue with yellow centre and red edges was very characteristic. The other usual symptoms were present,—gurgling, slight diarrhoea, yellow stools with white particles, cough, deafness, etc. For the first few days it was thought that the disease was pleurisy. Enteric was suspected on the seventh day. The smokey appearance of the urine was very distinct in this case. While enteric cases were in hospital the urine of these cases as well as that of patients suffering from ordinary fevers was placed in tubes daily, and it was generally easy to distinguish the urine of enteric cases from that of others.

CASE WITH QUARTAN FEVER.—Another case—Sakharan, male, age eighteen, was very interesting as showing what is perhaps an unique combination, *viz.*, quartan fever together with enteric. The patient had been in hospital for over two weeks with typical quartan fever when the enteric began.

In giving the temperature, as the ordinary chart would take up so much space, the following method will be adopted. The day of disease, the number of degrees above normal in the morning and in the evening will be given, omitting decimals.†

| Day of disease, ... (Enteric.) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 |
|--------------------------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| A. M. ... | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 3 | 1 | 4 | 5 | 2 | 4 | 4 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 3 | 2 | 2 | 1 | 2 | 0 | 0 | 1 | | |
| P. M. ... | 0 | 0 | 0 | 7 | 0 | 0 | 6 | 1 | 0 | 5 | 1 | 0 | 5 | 1 | 0 | 7 | 0 | 4 | 7 | 5 | 3 | 3 | 5 | 2 | 4 | 6 | 6 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 3 | 2 | 1 | 2 | 1 | 1 | 0 | | | |

† Degrees above normal are shown; Decimals omitted.

CASE WITH ROUND WORMS.—The case of Kisnia, female, age eighteen, June 1899, was rendered rather obscure in the beginning owing to the presence of round worms of which she

passed one on the seventh day. Santonin was given and next day two came away by the mouth and three by the rectum. She improved after this, and it was thought that the fever was probably due to the irritation from worms. Her chart shows an evening temperature of 104 on the third day and 105 on the fifth day. Of those who recovered this was the worst case. The delirium at night continued much longer than in any of the others, *viz.*, from the 9th till the twentieth day. The 105 was an axillary temperature and the case is also interesting as a recovery after a temperature of 105.

CASE WITH HEAT APOPLEXY.—While Dr. Jennings was in charge a man was admitted during the very hot weather of 1897 with symptoms of heat stroke. At the *post-mortem* ulceration of Peyer's patches was found. Dr. Jennings thought that it was a mild case of enteric with superadded heat stroke.

DIFFERENTIAL DIAGNOSIS.

In some of the cases given above the diagnosis was made obscure by the presence of other diseases. I shall now give an account of some cases—not enteric—but in which the differential diagnosis from enteric was a matter of difficulty. In the month of December 1895 there were five deaths in the jail hospital—one from dysentery with the rather uncommon complication of perforation, one from enteric (a case recorded above), one from acute tuberculosis, and one which for want of a better name was put down as remittent fever.

It was a most curious coincidence that there should be in hospital at the same time as some of the enteric cases examples of the rare diseases cerebrospinal meningitis and acute tuberculosis. As these cases are of special interest not only from the point of view of their differential diagnosis from enteric fever, but also on account of the rarity of the two former, I shall give a detailed account of them. In the September number of the *Indian Medical Gazette* reference is made to the "obscure and all embracing term remittent fever" and in connexion with the remarks made in that issue of the *Gazette* a case which was returned as remittent fever may be of some interest.

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Day of disease, ... (Enteric.) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 |
| A. M. ... | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 3 | 1 | 4 | 5 | 2 | 4 | 4 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 3 | 2 | 2 | 1 | 2 | 0 | 0 | 1 | | |
| P. M. ... | 0 | 0 | 0 | 7 | 0 | 0 | 6 | 1 | 0 | 5 | 1 | 0 | 5 | 1 | 0 | 7 | 0 | 4 | 7 | 5 | 3 | 3 | 5 | 2 | 4 | 6 | 6 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 3 | 2 | 1 | 2 | 1 | 1 | 0 | | | |

REMITTENT FEVER.—Dhondya, male, age forty-five, was admitted into hospital on arrival in the jail. He suffered from general oedema, his eyelids were puffy and he had slight dyspnoea.

There was no albumin in the urine, no signs of scurvy, the conjunctivæ were very pale, and the spleen enlarged. He had malarial cachexia. The points of interest in his case are (1) the diagnosis from enteric fever, (2) an inorganic murmur, (3) the use of the term remittent fever, (4) the possibility of the case being one of enteric with dysentery.

The temperature showed a gradual rise for about ten days and led to a suspicion of enteric: the spleen was enlarged and he was deaf but only when the temperature was high.

Against enteric: the large morning remissions in the second week three to four degrees—the absence of gurgling and pain in the iliac fossa—the temperature seemed to fall after a large dose of quinine—the urine did not give Ehrlich's reaction. At the *post-mortem* there were no ulcers in the Peyer's patches.

(2) A murmur was heard at the base of the heart and disease of the aortic valves was suspected, but at the *post-mortem* the valves were found to be normal. The murmur had been inorganic.

(3) From the twenty-sixth to the thirty-second day—the day of death—there was diarrhoea with yellow liquid stools. The appearance of the mucous membrane of the large intestine was curious, very thick and inflamed, but there was no ulceration. There had been no mucus and no blood in the stools.

In the record of the case I had noted "the case is not like an ordinary case of dysentery: it will be entered in the returns as remittent fever." It would I think be better to put such a case under the new heading "Fevers not classified."

(4) In the record of the case I had written "Is it possible that this could have been a mild case of enteric followed by dysentery?" The patient was forty-five years of age, and I am not certain whether the Peyer's glands in a patient of this age would be affected to the extent of ulceration in enteric fever (see remarks of Dr. W. J. Buchanan on Double Infection of Dysentery and Enteric in the September issue of the *Indian Medical Gazette*).

The temperature was as follows:—

vomited everything he drank; no sweating. He died on the sixth day after admission.

Post-mortem (made by Surgeon-Major Harris). Layer of purulent lymph found covering both hemispheres and cerebrum, and also on cerebellum below dura mater and between pia mater and arachnoid dipping between the convolutions; the deposit appeared to be thickest at the longitudinal fissure and also on the upper surface of the cerebellum.

Remarks.—The duration of this case was six days. I have made *post-mortems* in three cases—one in the Nagpur Jail and two in the Raipur Jail, the duration of one of these cases was twelve days, and of the other two about thirty days. The typical yellow fibrino pus at the base of the brain was found in each case. Surgeon Lieutenant-Colonel Moorhead* read a paper on this disease at the Calcutta Congress and had collected a number of cases.

The temperature was as follows:—

| | Day of disease | .. | 4 | 5 | 6 | 7 | 8 | |
|--------------------------|----------------|----|-----|---|---|---|---|------|
| Degrees above normal. | A. M. | * | ... | 0 | 3 | 3 | 4 | Died |
| | r. M. | * | ... | 2 | 5 | 4 | 4 | ... |

TUBERCULAR MENINGITIS. ACUTE TUBERCULOSIS.—Moorut, age thirty. Had been admitted to hospital four times during the past five months.

In June he was admitted for fever and cough pain in chest, and he was also suffering from otorrhœa. In July for otorrhœa; an abscess formed inside the ear. There was considerable tenderness over the mastoid with signs of inflammation. Trephining of mastoid was proposed, but the abscess pointed above the ear and was incised. The discharge from the ear continued for over two months. It ceased about the end of September. The evening temperature occasionally rose to about 100.

In September he was admitted for slight fever and cough. Admitted again on 1st December.

| Dondya. | Day of disease | .. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|---------|----------------|----|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| A. M. | ... | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 4 | 2 | 4 | 2 | 0 | 1 | 1 | 3 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | |
| P. M. | ... | 4 | 3 | 2 | 2 | 4 | 5 | 4 | 5 | 5 | 6 | 6 | 6 | 5 | 6 | 6 | 5 | 6 | 4 | 5 | 4 | 4 | 3 | 4 | 3 | 1 | 0 | 4 | 3 | 1 | 0 | 0 | |

* Degrees above normal are shown; Decimals omitted.

CEREBROSPINAL MENINGITIS.—Manaya, age fifty-five, was in bad health on admission, weight 95 lbs., was allowed to work in garden, had gained 11 lbs. in weight.

Admitted to hospital with fever and constipation and severe pain in back of neck and in back; four days later he became delirious: he

had slight fever and was feeling giddy. Up till the fourth no special notice was taken of his case. On that date he complained of pain in his back and head; he could not stand, was unable to pass urine, tongue dry and coated.

* Now of Belfast (*vide Trans. of Indian Medical Congress.*)

On 5th he became delirious, was constantly muttering and moving his arms. Attendants had to hold his hands. Urine foul smelling high coloured, with Ehrlich's test turned red, but only after a few minutes. The urine somewhat resembles the urine of enteric fever. Pain in the lumbar region severe. The lower part of his body seems to be paralysed, but it is difficult to say as he is unconscious.

6th—Quite insensible: carphology distinct, breathing heavy but not stertorous, left pupil larger than right. Head turned to left; conjugate deviation of eyes to left. If the head is forcibly turned to the right, the twitching in the hand muscles increases, pulse 87, weak. Movement of arms constant. There is also some tonic spasm in the arms. The movement is greater in the right arm than in the left.

Surgeon-Major Harris was called in, in consultation. The possibility of abscess in the brain due to extension of inflammation from the ear was discussed. There were no symptoms pointing to inflammation in the ear, it was therefore decided to wait.

He died next day.

Post-mortem.—In the apex of both the right and left lungs there is a cavity about the size of a pigeon's egg, surrounded by a thick fibrous membrane. The adjacent portion of the lung is infiltrated with soft tubercular nodules. The nodules are about the size of No. 4 shot and are grouped together in the form of the inflorescence called a compound or branching corymb. The pleura thickened and adherent to chest wall.

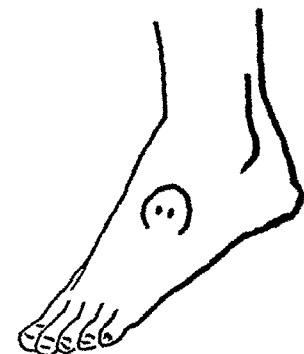
(To be continued.)

I arrived at the hospital about twenty minutes after the man had been bitten; the snake had not been seen and I was rather sceptical, but examination revealed two small punctures about half an inch apart on the left side of the dorsum of the left foot; the man was in a nervous, excited, and restless condition, and talked in a whisper, but constitutional symptoms were very slight, the pulse was a trifle hurried, and the respiratory rate was hardly more than normal; the ligature had been effectually applied by the sepoy and circulation was arrested; there were said to have been some spasmodic twitchings of the left leg when he was first taken in, but there were none after my arrival.

A deep incision was immediately made for three quarters of a circle round the punctures on the proximal side, in order to cut all the vessels proceeding from the injured part, and the wound allowed to bleed freely. At the first gush, the hospital assistant remarked on the curious colour of the blood; it was a peculiar dull orange red tint, and exactly described by the term "brick-dust colour" used by Cunningham in his researches on the action of the poisons of the colubrine and viperine snakes; as bleeding went on this colour became less marked and gradually assumed a normal hue; the limb was allowed to hang down until the bleeding gradually stopped; the blood did not coagulate; four injections of pot. permang. were then made in the vicinity of wound.

One hour after the bite had been inflicted, an injection of liq. strychnæ and a dose of two oz. brandy were administered and the ligature removed; the patient was carefully watched, but neither the pulse nor the respiration seemed to be sensibly affected; bleeding from the incision at once came on again and had to be stopped by pressure. Shortly after, he vomited some food, deeply stained with blood, and when he passed urine, it was dark red with blood.

On taking off the dressing the next morning, bleeding started again as freely as ever and pressure had to be again applied; there were never any serious symptoms either cardiac, respiratory or nervous, but the haematuria continued for forty-eight hours, when it began to lessen, and the bleeding from the wound on the removal of pressure continued also until the dressing was taken off sixty hours after the first application when it was found to have stopped, and it did not recur; the man was then quite well and was only kept in hospital till the wound healed; a large ecchymosis beneath the surface



The Flippot of Hospital Practice.

A CASE OF SNAKE-BITE.

BY S. BROWNING SMITH,

CAPTAIN, I.M.S.,

Chitral.

In connection with the cases of snake-bite recorded in the March number of the *Indian Medical Gazette*, the following notes may prove of interest:—

One evening, after sunset, in the autumn of 1897 at Mian Mir, a sepoy of the 32nd Pioneers, walking through some grass near the regimental hospital, suddenly felt a sharp pain in his left foot and cried out that he had been bitten by a snake; another sepoy, who was with him, with great presence of mind, immediately tied a piece of puggari round the left calf and took him to hospital.

of the tongue was noticed the day after the bite.

Taken in connection with Cunningham's experiments of the action of the viperine poisons, the severity of the blood changes in this case is very interesting.

1. The peculiar brick-dust colour of the blood from the wound near the affected part.

2. The haematuria, haemoptysis, and ecchymosis of the tongue.

3. The non-coagulability of the blood for more than forty-eight hours after the bite was inflicted, shown by the continual bleeding from the wound on the removal of pressure.

The absence of any signs of the action of the poison on the central nervous system is also notable.

If a ligature is applied at once, as in this case, I think there should be more chance of averting a fatal result, if a free incision is made round the wound, and haemorrhage encouraged until the part below the ligature is practically bloodless than in mere scarification of the wound and subsequent suction.

A CASE OF POST HEMIPLEGIC ATHETOSIS.

UNDER THE CARE OF G. H. A. HARRIS,
LT.-COL., I.M.S.

1st Physician, Medical College Hospital, Calcutta.

REPORTED BY U. N. BRAHMACHARI, M.A., M.B.,
House Physician.

THE patient named Khetter, *et. 25*, a Hindu male, belonging to the railway mail-service, states that on 17th July 1899, twelve hours after a fatiguing swim, he began to suffer from giddiness and weakness in the left side of his body. Two or three days later he was admitted into Lt.-Col. Harris's ward for treatment of hemiplegia with the following symptoms:—

(1) Left facial palsy.

(2) Complete motor paralysis of the left upper and lower extremities without any sensory disturbance.

(3.) Exaggeration of the left knee-jerk. There was no history of syphilis but history of occasional transient fits of unconsciousness for about a year. The patient left hospital almost recovered. One night about a month after leaving hospital, he was awakened from sleep by an involuntary flexion of the left middle finger which, since then has more or less persisted in a series of mobile spasmodic movements. This condition gradually increased and affected the other fingers, interfering very materially with his work, and it was on this account that he again sought relief on 13th December 1899. The symptoms on admission were :

(1) Slight disorder of sensation in the fingers of the left hand. The following was the table of tactile sensibility of both the upper extremities as measured with the aesthesiometer.

| | Right Side. | Left Side. |
|---|-------------------|--|
| (a) Dorsum of 1st phalanges of fingers. | { $\frac{7}{8}$ " | { 2 " in middle finger. 1 $\frac{1}{2}$ " in index finger. 1 " in the thumb. |
| (b) Palm of hand ... | $\frac{5}{8}$ " | 1 $\frac{1}{2}$ " |
| (c) Back of hand ... | $\frac{1}{2}$ " | 2 " |
| (d) Forearm ... | $\frac{1}{2}$ " | 1 $\frac{1}{2}$ " |
| (e) Dorsum of feet ... | $1\frac{1}{2}$ " | 1 $\frac{1}{2}$ " |

(2) Strength of the grasp of the hands as measured with the dynamometer:

| | |
|----------------|-------------|
| (a) Left hand | ... 20 lbs. |
| (b) Right hand | .. 70 lbs. |

(3) Marked increase of the left knee-jerk.

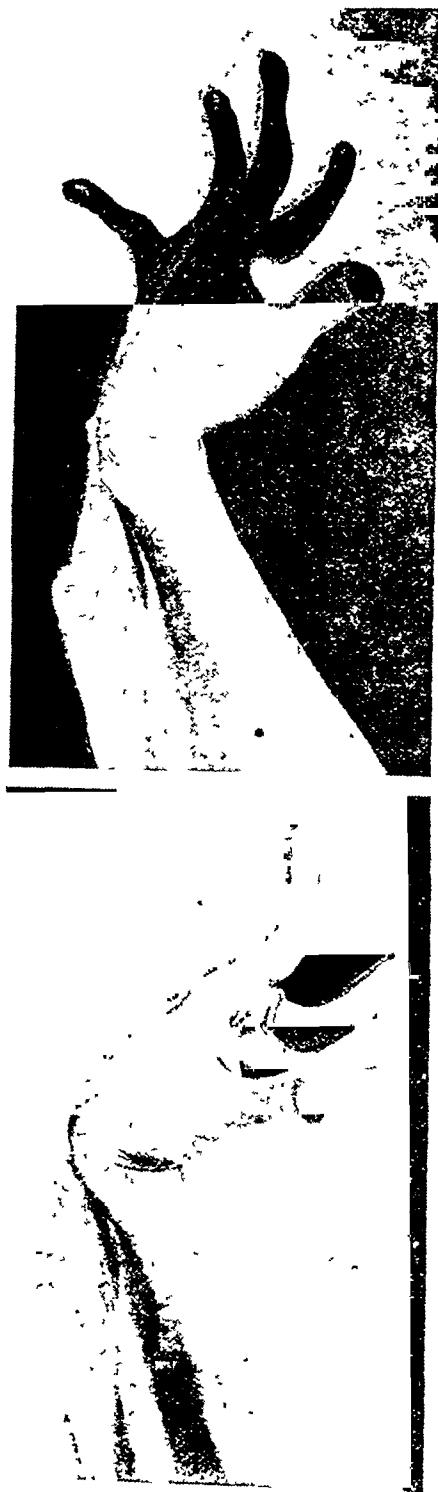
(4) Athetoid movements in the fingers of the left hand. There is a slow mobile spasm affecting mostly the interossei and the lumbricales of the left hand. The amount of spasm in these muscles varies from time to time and thus slow, successive, incoordinate movements of flexion, extension, pronation and supination of the fingers are produced. The movements have been compared (Gowers*) to those of the tentacles of the cuttlefish. During the execution of some of the movements the interphalangeal joints pass into a state of subluxation. Sometimes the distal phalanges are extended, shewing that the long extensor also partakes of the spasm. Sometimes the 1st phalangeal joint of the middle finger is strongly flexed with the thumb closely pressing against it, and sometimes there is flexion of the last phalanges of one or more fingers, showing that the long flexors of the fingers also partake of the spasm. This implication of the long flexors is noteworthy, as Gowers says this never takes place. Rarely the fingers assume a position which has been compared (Charcot†) to that of the contracture of the type of extension in chronic articular rheumatism. Occasionally, there is a simulation of some of the above movements by the fingers of the right hand, though they are hardly so marked as to justify the case being regarded as one of double athetosis. (Two of the positions assumed by the fingers are given in the accompanying photographs.) Rarely, there is an involuntary hyper-extension of the left big toe especially during walking. The movements disappear during sleep and can be controlled and limited only for a short time by position and extraordinary effort of the will. The phenomena, as pointed out by Von Zemissen, seem to have partially the character of associated movements,‡ for while the fingers move, the arm becomes rigid and hard.

* Gowers' Diseases of the Nervous System

† Charcot Leton de Mardi 1887.

‡ Charcot's Diseases of the Nervous System (New Sydenham Society 1888).

The spasm disappears when the wrist or the fingers are rigidly flexed, but after a time it starts again, sometime slowly and sometimes suddenly. The spasm markedly interferes with a voluntary act, so that the patient has to wait till it passes off. There is not the slightest contracture in any of the fingers



is alive to the character and significance of its symptoms. It might possibly be thought due to disseminated sclerosis and paralysis agitans; to paramyoclossus multiplex when it attacks the muscles of the arm and face which it very rarely does after hemiplegia; to convulsive tic, chorea spastica, tetany and localized chorea of Sydenham; in none of these conditions, however, are the movements truly athetoid. The possibility of hysterical simulation of the movements should be borne in mind. The purposeless nature of the movements and the absence of hysterical stigmata should determine the diagnosis. The condition, as Drewry* says, is also impossible to be imitated even by the most skilful malingerer. Some authors, including among others Hammond and Gray,† seem to make an unfortunate confusion by including post-hemiplegic athetosis under post-hemiplegic chorea; but the latter, properly speaking, refers to chorea-like movements sometimes occurring in the affected limbs after hemiplegia, and should have nothing to do with the slow and peculiarly characteristic movements of athetosis.

The seat and nature of the lesion in athetosis have not as yet been satisfactorily worked out. Hammond, who first described the condition, supposed the seat of the affection to be in the intracranial ganglia or in the upper regions of the spinal ganglia. He also states that one probable seat of lesion is the corpus striatum. Von Zemissen supposed it to be due to changes, partially circumscribed, of the centres of motor innervation; while Hitzig supposed it to be due to irritation of these centres.‡ Beevor considers it to be due to lesions in the motor regions of the cortex,§ and in favour of this view might be cited his case in the *British Medical Journal* for 1890. Osler, however, says that in cases of athetosis occurring in adults, the lesion is not in the cortex. Gowers|| says that a distinction must be made between the cases occurring in adults and those in childhood. He thinks that in the former the disease is situated in or outside the optic thalamus, or in some cases in the posterior of the internal capsule. In Gould's Yearbook of Medicine and Surgery for 1899, it is stated that Von Kunu collected fourteen cases from literature, in seven of which there was localized disease of the corpus striatum, in four of the optic thalamus, in two of the pons and in one a softening involving the optic thalamus and corpus striatum.

As regards the nature of the lesion it has been supposed to follow mostly cerebral softening causing "extensive slight damage." James

* Zemissen's *Cyclopædia of the Practice of Medicine*.

† Beevor's *Diseases of the Nervous System*.

‡ Gould and Pyle's *Anomalies and Curiosities of Medicine*.

§ Hammond's *Diseases of the Nervous System* (1873.)

|| Osler's *Medicine*.

(5) Besides the above there were the negative symptoms of absence of motor paralysis of any cranial or spinal nerves and of wasting of any groups of muscles.

Remarks.—The diagnosis of a case of athetosis as a post-hemiplegic state is simple when one

Taylor in his article on cerebral palsies of children states that cases of paralysis followed by athetosis in adults are mostly the results of accident.* In the present case no history of accident can be discovered. The history of hemiplegia following over-exertion, might be suggestive of embolism, in which case, however, the paralysis would more immediately follow the over-exertion; nor are there at present any signs of heart lesion which might be suggestive of a possible source of emboli. On the other hand, the excited action of the heart and the increase in blood pressure consequent upon the over-exertion in swimming might have led to rupture of some diseased vessels in the motor tract of the brain. The diseased condition of the vessels might have been the result of syphilis of which the patient, however, denies any history. Besides, extreme headache which forms one of the characteristics of syphilitic disease of the vessels of the brain is absent in the present case. It might be that the association of the over-exertion with the hemiplegia was an accidental one, and that the occasional transient fits of unconsciousness might represent the minor form of epilepsy (petit mal), with which the athetosis was connected, as many of the recorded cases have been.

The present case is of interest as it is a case of athetosis in an adult unassociated with hemianesthesia and vasomotor change, and following an attack of marked hemiplegia after it was completely recovered from. Another point of interest in the present case is the fact that the long flexor and extensor muscles of the fingers partook of the spasm to some extent, which Drewry says are rarely affected; while Gowers says, as already mentioned, the long flexors are never affected.

I am indebted to Lieutenant-Colonel G. H. A. Harris for permission to publish this case from his wards.

"BAHEDA" POISONING.

BY BABU BHONDOO LAL,
Civil Hospital Assistant.

A boy, named Phakiria Gond, nine years of age, ate fresh kernels of "bahédá" seeds in excess on the afternoon of 4th February 1900, and was brought by his mother to Múl Branch Dispensary, in the Chanda District, on the forenoon of 5th February 1900 for treatment.

The following abnormal symptoms were observed in him at that time, such as—Countenance anxious, eyes shut, pupils normal, unconsciousness, retardation and slowness of respiration, pulse feeble, head and neck hung on shoulder, body warm, no answer on ques-

tions, occasional sighs and stoppage of breath, fore-arms flexed on arms, rigidity of the upper extremities; lower extremities were stretched and rigid; passed one normal stool at his house as his mother said. There was no vomiting—languor. These threatening symptoms did not allow me to count the beats of the pulse and to take temperature of his body.

The patient was immediately placed under artificial respiration, and the following mixture was given :—

| | | |
|------|------------------------|-----------|
| R. | Spirit. Ammon. Aromat. | ... m xv |
| Aqua | ... " | ... ad ʒi |
| Mix. | Every one hour. | |

After the third dose of the mixture he opened his eyes and turned on his other side, and his pulse became stronger than before. He began to breathe naturally. His mother then took him away to her house as this is an out-door dispensary, and next morning, that is, on the 6th February 1900, the patient was better as I sent the Kotwar to inform his mother to bring him to this dispensary for further treatment, but she sent word she will get him treated at his house by native quacks. The boy might have been treated by them but he died on the same date at 4 P.M.

The patient's mother states that she went in company with him to the wood and began to cut dry grass for selling while her son, the sick, saw a "bahédá" tree there, sat under it, and began to break the stones of the "bahédá" fruits, which were lying under the tree and to eat their kernels as much as he liked which caused giddiness at the very time as she said.

"Bahédá" tree is akin to the tree of Bassia latifolia in shape and size, and is common throughout all parts of India, the fruits of which are conical. Their pericarps are ash-coloured externally and green internally, in which hard and smooth stones are enveloped. The stones contain white kernels. Some fruits are oval and more than an inch long. The pericarps are astringent and are used by the natives as a colouring matter, but the kernels are nauseous although sweetish in taste and produce giddiness when they are fresh and not so when dry. Their pericarps are generally mixed with Belleric and Emblic myrobalans by native physicians who reduce them into powder which is called "Triphalá" in the Indian Materia Medica of all authors, such as:—Charack, Sushrut, Wagchutt, Lolimbráj, etc.

"Triphalá" is used by these physicians in diarrhoea and dysentery, and in people of grey hair with the intention of blackening hair-follicles so that they may not grow grey again.

The "Bahédá" poisoning is not mentioned in any of our works, hence it seems to me a new poison which ought to be published in the *Indian Medical Gazette* for the information of the public.

* Allbutt's System of Medicine, Vol. VII.

THE
Indian Medical Gazette.
 MAY, 1900.

THE TEACHING OF HYGIENE IN INDIAN UNIVERSITIES.

THE proposals recently made by the Committee appointed by the Faculty of Arts of Calcutta University, under the Chairmanship of Colonel T. H. Hendley, I.M.S., are such as must command the hearty approval of all who are interested in the sanitary progress of India. As medical men engaged daily in combating disease we well know that disease is scarcely as formidable a foe as ignorance. Of this the recent experience of the four years' war against plague is ample evidence. It is a common cry of a certain class of newspapers that it is not plague the people dread so much as plague measures, and Government has so far recognised this that they have endeavoured to let the people have their own way as far as possible. The question, however, may well be asked why the people should oppose measures entirely intended for their own good, and after all attended with but little inconvenience. The only reply is the ignorance of the people. All of us who have to do with the fight against plague must often have had to explain to our own subordinates, who willing enough are yet often ignorant of the reason why such measures are decreed. That we have come to almost a deadlock in the war against plague is due to the ignorance not only of the teeming millions but to the ignorance of the better classes—the educated classes of the native community. Hygiene and sanitation is to them merely a name, which they half understand and wholly dread. This is not as it should be. If therefore in the future India is to take her place among the civilised countries of the world she must be educated in a better sense than she has been; we must no longer have the spectacle of the graduates of our Indian Universities opposing, with all the force of a passive resistance, measures intended for their own good, and we can see no other means of doing this than by educating the leaders and the better classes of the community. *Jo Hukm* is an admirable

law where the people can do no other than obey, but in these days of Local Self-Government we must try other means. Government has recognised that what we want in India is the intelligent and willing co-operation of the people. This we can only have when the people understand that what is being done is for their own good.

No one imagines that it is possible to diffuse such knowledge among the millions of India, but surely it is possible to teach the better classes. Anyone who glances at the formidable curriculums for the various examinations in the Universities of India must acknowledge that if it is possible to teach thousands of students to understand mathematics, modern history, natural science or logics, surely it is possible to teach them the elements of Hygiene. We may recall the words of Dr. Ward Cousins, the President of the last Meeting of the British Medical Association, who, in his address, last year, said—"The battle against disease and death will only end in disappointment unless we have something more than the force of legislation—the great mass of the people must become active and willing helpers, the fathers and mothers of the land must learn how to maintain the healthfulness of their homes, and the blinding forces of selfishness and ignorance must be replaced by the best and purest aspirations. Depend upon it, the basis of national health is the personal cultivation of health. We desire to see a wider knowledge of the laws of health."

The students of the Universities of India, whom it is proposed to teach Hygiene to-day, will become the professional men, the Municipal Commissioners, etc., of tomorrow, we can well believe that if in their student days they have acquired a knowledge of the laws of health, as taught in any of the excellent textbooks proposed by the Committee, we would find them far more willing co-operators and helpers than they could possibly be without that knowledge.

For such reasons as these and because we believe that to fight successfully against disease we must first fight against ignorance we offer our cordial support to the proposals brought forward by Colonel Hendley's Committee—the first attempt as far as we know to introduce the teaching of Hygiene into any Indian University, and we express the hope that the

Senate of the University will see their way to adopt the recommendations of this Committee, a procedure which we well believe will be of great practical importance, and which we hope to see copied by the other Universities of India.

THE POLYCLINIC.

THE new College for Medical Graduates, which was started in London last year, appears to us to be so admirably adapted to the use of Medical Officers on furlough that we think it desirable to give a full account of its working for the benefit of our readers who may be shortly going on furlough to England.

The new College, which is situated in Chenies Street, London, W. C., has now entered upon the second year of its existence and may be considered to be an assured success. It is supported by all the leaders of the profession in London and the Provinces. Already no less than 561 members of the medical profession have joined as members and subscribers, among whom we find the names of Surgeon-General R. Harvey, C.B., and several other members of the medical services. The list of original members is now closed, but new members can join at any time, the subscription for members being now fixed at two guineas per annum. The name of each candidate must be approved of by the Council. Medical men can join either as members or as subscribers, the difference not being much; a member incurs just the same financial responsibility as a subscriber, but to become a member he must make a special application in writing to the Dean, and if approved his name will be placed in that list, and he will become eligible for all offices and be entitled to vote at all meetings of members. His total financial responsibility as a member of the Incorporated College is limited to ten shillings. The privileges accorded to all subscribers and members are:—The use of the Library and Museum, attendance at all afternoon consultations, and at all Lectures or Committees which may be declared "open," and to receive post free the College Journal. In the Polyclinic formalities of election are reduced to a minimum. For obvious reasons the Council reserves to itself the right of approval in regard to all candidates. Subject to that approval, which will never be withheld except for the strongest of reasons, the doors are open to all who are eligible for election.

A member of the Indian Medical Service, now on half pay, Captain Hayward Pinch, F. R. C. S., has recently been chosen as Medical Superintendent, having been selected from a long list of candidates. The syllabus of the teaching is both varied and attractive; it consists of Clinical Consultations, Practical Classes, Courses of Lectures and Classes in connection with the College.

The Clinical Consultations, to judge by the reports in the College Journal, will form one of the most attractive portions of the curriculum. The following is the programme for the current session, Mondays (Skin), Tuesdays (Medical), Wednesdays (Surgical), Fridays (Eye, Ear, Throat and Nose). It is desired by the Council that all subscribers will take their due share in these consultations. They are to be regarded as quite distinct from the more formal clinical lectures, and questions and suggestions from those attending, so far from being considered as interruptions, will be welcomed. Medical men who have hospital patients for whom they desire the advantage of a consultation are invited to send or bring the cases. Reports of the progress of the cases or of the effects of treatment will be published in the Journal. It is probable that when the reputation of the College is established in the public mind that patients will present themselves for the benefit they will derive from the consultations.

The following practical classes have been arranged for the present session. Each course will last for six weeks. Classes can be had in (1) medical and surgical anatomy, (2) on diseases of the nervous system, (3) on the use of the Röntgen rays, (4) on practical ophthalmology and the use of the ophthalmoscope, (5) on practical rhinology and laryngology, (6) on practical otology. On each occasion the members of the class will receive a typed résumé of the matter dealt with.

In addition to the above there have been arranged the following course of lectures: (1) on general ophthalmology by Mr. Marcus Gunn, (2) on insanity by Dr. Savage, (3) on diseases of the skin by Dr. P. S. Abraham, (4) on comparative pathology by Dr. Woods Hutchinson.

In addition there are the following courses in connection with the College, (1) a month's course on practical bacteriology, under Professor Crookshank, at King's College, lasting for five hours daily. This is a very complete and valuable

course and has been approved of by the Secretary of State for candidates for appointments under the Colonial Office. There are also similar classes at the Bethlem Asylum for Mental Diseases, and also a very complete course on Hygiene and Public Health under Professor Winter Blyth.

We may add that the fees for most of the courses, lasting six weeks, are fixed at two guineas.

It will be agreed that the Medical Officer at home on furlough in the present day will not have to go far to find himself suited. It is satisfactory to see that the vast amount of clinical and teaching power which exists in London has at last been organised for the benefit of post graduate work, formerly it was not possible to obtain this without going abroad to Paris or Vienna.

EPIDEMIC DYSENTERY IN JAPAN.

In an interesting report to the Surgeon-General, U. S. Marine Hospital Service, Surgeon Stuart Eldridge gives a valuable account of the epidemic of dysentery which appears to have spread over the whole of Japan during the past twenty years. It is not certainly known when this epidemic actually began; there appears to be no record of any such outbreak before the year 1878. Even in 1880 the epidemic was confined to certain districts of the southern island of Kiushiu; since then it has spread slowly and surely, till now every province in the three large islands of Nippon, Shikoku, and Kiushiu, are included in the area of the epidemic. In twenty-one years there have been 1,136,096 cases with 275,308 deaths reported or a case death-rate of 24 per cent. Of course, it is not maintained that these figures are very accurate, indeed, they most likely underrate the morbidity; but at any rate an annually recurring epidemic which accounts for over 22,000 deaths is sufficiently serious. For many years little or no notice was taken of the prevalence of this disease, but since 1897 the Central Government has taken the matter in hand, and something has been done to mitigate the severity of the disease.

The disease prevails almost exclusively during the summer and early autumn, sometimes lasting into November. Low and damp localities are most severely attacked, and rural districts suffer more than urban. Dr. Eldridge is inclined to

find a period of comparative immunity; after prevailing severely for three or four years the disease appears to lessen in intensity. This is shown not only from the recorded statistics but is borne out by the opinion of medical men who have worked among the cases. The disease is believed to be often propagated from man to man through the medium of the evacuations, contaminated food or drink, or it seems probable from accumulations of faecal matter, collected in the somewhat primitive Japanese latrines. But although to a limited distance it is believed that the gerin of the malady may be propagated through the air, yet it is clear that water is the chief agent in the distribution of the dysenteric poison, owing to the contamination of the wells, the principal sources of drinking water in Japan, which are often within a few feet of the latrines, or on a larger scale by the contamination of the streams. Night-soil is the only fertiliser used in rural Japan, and the rice fields often situated in terraces on the sides of hills are of course freely irrigated, each field in turn receiving the washings of its higher neighbour.

As regards the symptoms of the disease, they do not differ much from those of the disease in other countries. Many cases begin as catarrhal diarrhoea, which speedily becomes mucous and bloody. Other cases are frankly dysenteric from the first. As a rule the first manifestations of the disease occur in the descending colon or upper rectum, but it progresses upward till the whole lower bowel is involved. Chronicity is not a common event in this epidemic dysentery and "abscess of the liver is so rare, if it ever occurs, after this form of dysentery that I have after diligent inquiry, been unable to learn of a single undoubted case, and certainly I have never seen one"—a circumstance which is exactly paralleled by the history of dysentery in the jails of India. As regards the bacteriology of the disease, it is known that in 1891 Professor Ogata, of Tokyo, isolated a bacillus from the stools of dysenteric patients, which, however, has not been certainly identified. In 1897 Dr. K. Shiga, an assistant to Professor Kitasato, published (*Centralblatt für Bacter.* band 24) the result of his studies of dysentery. Dr. Shiga believes that he has found the specific cause of this Japan dysentery in a short rod about the same size as the *B. coli*. It is usually solitary,

but sometimes united in pairs and with methylene blue both ends stain thoroughly. With the blood serum of dysentery patients agglutinative reaction is well marked. Consequently Shiga has produced an antitoxic serum for the treatment of the disease. Sheep and horses may be used to procure the serum, but horses take two years' injections before they become unreactive to the poison. Dr. Shiga used in the human subject 20 to 40 c. c. of the serum in divided doses. His results are as follows :—

Up to November 1899, he had 266 cases with a death-rate of 12 per cent., while during the same period in the hospitals under ordinary treatment there were 1,736 cases with a death-rate of 34 per cent. Other reports of a limited number of cases in other hospitals, where Dr. Shiga's serum has been used, confirm these satisfactory results.

The above results are certainly the most elaborate and most hopeful that we have yet heard of in connection with the serum treatment of this disease; unfortunately at present the method of preparation is too costly to admit of any very extended use of the method, but it is to be hoped that these results will be followed up.

LONDON LETTER.

THE WAR.

THE relief of Kimberley and Ladysmith and the capture of Cronje and his army have imparted a roseate colour to the operations in South Africa. These have been followed by other successes, and affairs have altogether assumed a more promising and hopeful position. The loss of life since the commencement of the war has been very lamentable. Down to the week ending February 24th the number of officers and men killed amounted to 1,632, and of those who died of wounds, to 294, making a total of 1,946. In addition to this 723 officers and men have died of disease, principally enteric fever and dysentery. The proportion between fatalities caused by wounds and disease has been reversed, up to the present as compared with previous experience. In the Crimean Campaign the death-rate from injuries in the British Army was 47 per 1,000, and from disease 197; the corresponding rates in the French Army being 64 and 236.

In the American War of 1861-65 the rates for regular white troops were 27 and 32, for white volunteers 33 and 55, and for black troops 15 and 133. On the other hand in the Franco-German War of 1870-71 the proportions were 33 and 15. The shorter and sharper the war the more injuries and the fewer cases of illness. Probably if the South African Campaign is prolonged the proportion may be altered, especially if there is much seige and trench work, and the figures have not as yet experienced the full effect of the Ladysmith contribution; but the tendency of modern warfare is towards despatch in more than one sense of the term, and perhaps improved sanitation may be credited with reduction of mortality due to disease. Circumstances such as those of closely beleaguered towns render the practice of sanitation impossible, and when the record of the seige of Ladysmith comes to be written, it will no doubt disclose the baneful influence of the gruesome triad—abounding infection, bad sanitation and diminished resistance. Another remarkable feature in the statistics of the war as published is the large proportion of the wounded who recover—no fewer than 95 per cent. The proportion of numbers killed to wounded which the figures reveal is 1 to 3·7 which is not unusual.

THE REPORT OF THE INDIA PLAGUE COMMISSION.

The report of the Plague Commission is under active preparation; but, in view of the great importance of the subject, one section of it, relating to preventive inoculation, has been published in advance. This is a very elaborate review of the work of Professor Haffkine and enters fully and critically into the bacteriological, statistical and sanitary aspects of the question. The principles and methods of other analogous proceedings against small-pox, anthrax, rabies, and cholera are detailed, and Haffkine's system of preparing and using his prophylactic serum is elaborately described and subjected to a searching and somewhat hostile examination. Serious doubts are entertained and expressed regarding the efficiency of the means adopted for the purpose of sterilising and standardising the fluid. Notwithstanding the objection taken on these grounds the results of Haffkine's inoculations are pronounced to be favourable. In the first place no evidence has been discovered by the Commissioners that serious harm has in any instance resulted from inoculation, beyond some

local inflammation and some prolongation of pyrexia in a few isolated instances. As regards the protective value of the inoculation, the statistics collected in India are examined with discrimination and care ; and the important conclusions are drawn from them, namely, (1) that they diminish materially the incidence and mortality of plague among the inoculated as compared with the uninoculated ; and (2) that they diminish largely the case mortality of plague, that is, the fatality of the disease among the inoculated as compared with the uninoculated. Haffkine's procedure is therefore doubly valuable as a preventive of attacks and as a means of saving life among those attacked. It thus mitigates liability to contract plague and mitigates the severity of the disease when contracted. As regards the duration of these protective and moderating influences no satisfactory evidence is forthcoming nor decided opinion offered. It is stated vaguely that "the protection certainly lasts some considerable number of weeks." Holding these views the Commissioners recommend that "under the safeguards and conditions of accurate standardisation and complete sterilisation of the vaccine and the thorough sterilisation of the syringe in every case, inoculations should be encouraged wherever possible and in particular among disinfecting staff and the attendants of plague hospitals."

INDIGENOUS DRUGS.

The inclusion of Indian and Colonial drugs in the 1898 Edition of the British Pharmacopœia was abandoned for lack of sufficient information as to the medicinal plants which ought to be made official, the preparations of those which ought to be employed and the utility and value of the various drugs suggested. It was resolved therefore to compile an Indian and Colonial Addendum which should include the best accredited of vegetable medicines indigenous to India and some of the Colonies. Professor John Attfield, F.R.S., who was editor of the Pharmacopœia and is editor of the Addendum, has received reports from India, which have enabled him to issue a paper on the subject and will probably enable him before long to compile a satisfactory Indian Section of the Addendum. He states in this paper that committees, central and provincial, have been organised in India for the purpose of submitting certain selected drugs to trial. It is very desirable that this matter

should obtain careful attention in order that exact and authoritative testimony should be forthcoming regarding the therapeutical value of these drugs ; because the statements advanced on this subject up to the present time have been too often of a very vague and indefinite description. Empiricism even when time-honoured is in these days not a sufficient justification for the employment in the treatment of disease of substances which were originally selected and used under the guidance of erroneous views, pathological and therapeutical.

8th March 1900.

K. McL.

Current Topics.

TWO PAMPHLETS ON PLAGUE.

We have received two pamphlets on plague which we purpose to notice together. The first is by Mr. E. H. Hankin, the success of whose pamphlet on cholera has induced him to publish a similar one on the plague. This is the second edition of the little book, and we are very glad to see that a second edition was called for. It is not our intention to criticise this book. It is intended for the use of non-medical men, and to educate the public on the disease. We quite agree with Mr. Hankin on the need for such a work at the present time, as much of the opposition to the very necessary measures of prevention are due to the want of knowledge of the danger. All of us who have worked against the plague within the past three years well know the great ignorance even of our subordinates who may be doing their best to help us.

Mr. Hankin's little book is written so clearly and in such simple language, that it will be easily understood ; he sketches the history of the disease, the causes and the means of prevention. We specially recommend chapters 4 and 5 on the prevention of the disease. The price of the pamphlet is only nominal, four annas, so that we hope for an extended sale for it, which we consider it thoroughly deserves.

The other pamphlet on the subject of plague is of a different kind, it is a report compiled by Surgeon-General W. Wyman of the United States Marine Hospital Service. It is intended to give American readers a full and useful account of all that is known about plague. Like all the rest of the world, the United States are on the watch against this fell disease, which now may fairly be called a pandemic, for few countries, literally "from China to Peru," have escaped a visitation. We would point out one fallacy which has been given too much promi-

nence in the beginning of the report, and that is "that one reason why plague persists in the East," is that the people are badly fed on rice and other grains which contain too little protein. We have no authority for such a statement: the rice feeding parts of India have not suffered any more than the wheat-eating parts; indeed, up to the recent recrudescence in Bengal it might fairly be said that the rice eating millions of Eastern Bengal had even shown a degree of immunity to the disease. At least such a thesis might have been maintained with more show of reason, than that which tried to explain the supposed immunity of Calcutta from a malarial saturation of the inhabitants. Surgeon-General Wyman's pamphlet gives an interesting account of the modern methods of fighting plague and we learn with interest that the preparation of the Haffkine prophylactic has been commenced in the Hygienic Laboratory in Washington. The pamphlet also gives an account of the defensive measures taken by other governments to ward off the pest from their dominions.

TÆNIA NANA A CAUSE OF CHYLURIA.

A RECENT issue of the *Lancet* contained the following note: "In the Russian Archives of Pathology (tome viii., fasc. 6) Dr. Predtechenski of Moscow reports a case of chyluria which is interesting for several reasons. It is the first case of the kind reported from Russia, though in other parts of Europe cases are occasionally met with in subjects who have not resided in the tropics. Dr. Predtechenski has been able to find some twenty of these cases in medical literature. The cause of tropical cases is generally allowed to be some parasite—*filaria sanguinis* or *distoma haematoeum*. In Europe *strongylus gigas* has been found and some authors believe that tumours and other pathological conditions which cause stagnation of the chyle and lymph-streams may also produce chyluria. In the Russian case a parasite was detected; at least ova were found in the urine which were diagnosed as those of *tænia nana*, a minute variety of tapeworm which is tolerably common in Italy but is almost unknown in England, though Dr. Ransom of Nottingham has reported the case of a girl from whose intestinal canal a large number of these parasites were expelled. Dr. Predtechenski's patient was an officer's wife aged twenty-three years, who had at times passed turbid or milky urine ever since she was sixteen years of age. When seen by him the urine contained, in addition to epithelium, specks or small clots of fibrin, crystals of oxalate of lime, and red and white corpuscles, the last-named having a single spherical nucleus and being in fact small lymphocytes. There were also found some spherical bodies looking like the eggs of some entozoon. They were nearly transparent and under a good immersion lens

were seen to possess six hooklets. Their diameter was from 20 to 25 and they agreed with the figure of the ova of *tænia nana* in Mosler and Peiper's work on Animal Parasites. It is suggested that the worm itself may have existed in the kidneys, as another variety—*tænia Madagascariensis*—is stated to have been found alive in the kidney in a patient suffering from chyluria. The parasite probably occludes the lymphatics and causes them to become distended and finally to rupture, so that the lymph finds its way into the urinary passages. The most efficacious treatment in this case appeared to be gallic acid in fifteen grain doses three times a day."

The *tænia nana* is a widely distributed worm, but hitherto beyond vague intestinal symptoms no pathological effects have been recorded.

THE CANNIBAL HABITS OF MOSQUITO LARVÆ.

IN continuation of his letter on this subject in our March number, Captain S. P. James, I.M.S., sends us further information on this interesting point, which neither Celli nor the West-African correspondent of the *British Medical Journal* seem to have quite understood. Both these authorities seem to regard mosquito larvæ as essentially vegetable feeders, this Capt. James considers to be not the fact. He informs us that he has watched *Anopheles* larvæ feeding time after time with a powerful lens. They do not touch vegetable food and appear to live exclusively upon animal food. Tiny water fleas, small cyclops and weak or dying larvæ of any kind are all drawn into their mouths by the powerful suction action of two fan-shaped organs, attached near the mouth, composed of numerous cilia. These work with an incessant quick motion when the larva is feeding, and cause a current which draws in the food.

We have also much pleasure in announcing that Captain S. P. James, I.M.S., has completed the working out of the metamorphosis of the *Filaria Sanguinis Hominis* in the *Anopheles* Genus of mosquito. This is an important discovery in the life history of this parasite, and one which has not been made before. Only recently Bauerstorf of Brisbane announced that he had traced out the metamorphosis of this parasite in a species of *Culex*. We publish details of Captain James' observations in the present issue.

BERI BERI OR KAKKE IN JAPAN.

DR. TATSUSABURO YABE, Principal Medical Officer in the Imperial Japanese Navy, contributes a short article under the above heading to the *Archives de Médecine Naval* (quoted in *Lancet*) for January, 1900. Not long ago *kakke*, or beri-beri, was the most prevalent malady in the Japanese fleet, at times absolutely paralysing

action, just as formerly scurvy used to behave in European squadrons. In 1882 during the Corean expedition, and about the same date in a fleet off the coast of South America, *kakke* placed between 30 and 40 per cent. of the total strength *hors de combat*. "At the commencement of the eighteenth century, continues Dr. Yabé, "the English Admiral Flosier (*sic*) en route for the East Indies at the head of seven ships of the line, had he not the pain of losing his crews twice over by scurvy, and did he not himself die broken-hearted?" Scurvy was at length mastered by means of prophylactic measures—they gave the men fruits, fresh vegetables, lime-juice, and lemonade; *kakke* was brought under control by amelioration of the rations—an innovation due to Mr. Kauébiro-Takaki. Scurvy and *kakke* resemble each other by the uncertainty in which their etiology is enveloped. They are said to be epidemic diseases, but as yet the specific microbes have not been discovered. Mr. Takaki believes that *kakke* is a disease of nutrition, and although Dr. Yabé cannot share the belief, he nevertheless freely acknowledges the beneficial results that have attended on the prescriptions of the eminent creator and organiser of the Japanese Naval Medical Service. During the sexennial period 1878-83 the average percentage of sickness from *kakke* was 32·5 and there were 246 deaths. In February, 1884, the Takaki ration was introduced, when at once the disease began to disappear from the navy. In 1885 the percentage was 0·59 and during the next eight years it averaged only 0·02. From 1885 to 1893 inclusive, not a single death from *kakke* took place. In 1894, during the war with China, two fatal cases occurred, and the following year there was one, but the percentage of *kakke* sickness for the biennium was only 0·19. Dr. Yabé thinks that excessive rice-eating predisposes to *kakke*, whereas barley, and especially pearl-barley—which has long been a favourite article of food amongst the Japanese peasantry—acts as an almost never-failing prophylactic. It was while there was dearth of barley in the Chinese campaign that *kakke* committed its ravages." We have frequently directed attention to the supposed connection between rice and beri-beri, but rice alone will not explain the prevalence of beri-beri in parts of India. This disease is a very formidable one in the Straits Settlements, in 1898 there were admitted to the sixteen hospitals of the colony 1,329 cases, 420 of whom died. By the by has any one ever heard of a case of beri-beri in the non-rice-eating parts of India, e.g., N.-W. Provinces and Oudh or in the Punjab.

THE COLD BATH TREATMENT OF TYPHOID FEVER.

LAST month we quoted certain figures to show the success of the method of treatment of

typhoid fever by tepid baths. We here give an extract from an American contemporary which shows how universal the use of the baths has become, and how remarkably uniformly successful the method has been. The only trial of this method on a large scale in India which appears to have seen the light is that described by Captain F. R. Newland, R.A.M.C., in the Quetta outbreak of 1896 (see *Indian Medical Gazette*, December 1899, p. 385.) The *Journal of the American Medical Association* writes—"While the cold bath treatment subdues headache, overcomes restlessness, clears the sensoria, induces sleep, the most important result of all, however, is the reduction in mortality. The death-rate from typhoid fever subjected to any or all other forms of treatment has long averaged from 18- to 20 per cent., while in large numbers of cases submitted to the cold bath, it has averaged between 7 and 8 per cent., and there is striking agreement in this respect between the results obtained, not alone in Germany and on the Continent of Europe, but also in England, in Australia, and in the United States, in fact, wherever the cold-bath treatment has been faithfully and intelligently employed. To the statistics already published, Baumler adds the results of observations made in the Medical Clinic at Freiburg from October 1st, 1876, to September 1st, 1899. During this time there were treated with cold baths 1,019 patients—575 males, 444 females—suffering from typhoid fever, with 95 deaths (57—9·91 per cent. in males, 38—8·55 per cent. in females)—9·32 per cent. These figures include all cases, without reference to the severity of the attack, to the time of admission and of death with relation thereto, to the presence or absence of complications and sequelae, and to the causes of death. Making allowance, however, for cases admitted moribund or with incurable complications, and for those in which death occurred from tuberculosis after recovery from typhoid fever, the mortality was only 7·9 per cent.—8·58 per cent. in males, 7·37 per cent. in females. These figures agree closely with those of Tripier and Beauveret in Lyons, of Osler in Baltimore, of Wilson in Philadelphia, and of Hare in Brisbane."

SCARLET FEVER IN THE TROPICS.

Apropos of the discussion in our columns on the question of scarlatina in India, the following note from *The Medical Press* is interesting:—

"It is asserted that the Japanese enjoy a racial immunity against scarlet fever, and an American physician has even proposed to inoculate Anglo-Saxon children with the blood of Japanese infants as a means of securing protection against infection. This curious immunity, however, is not peculiar to the Japanese, for scarlet fever is reputed to be very rare in the western pro-

vinces of China, in Cochin China, Annam and Tonkin. It shows, moreover, little tendency to spread in South America, in Honduras, and in Jamaica. Whether this exemption is due to racial idiosyncrasy or to the climate being unfavourable to the specific organism is a moot question, but circumstances appear to point to race as the predominating influence. In India, where scarlet fever is also comparatively rare, the other exanthemata afflict the natives just as much as the white population. According to *La Médecine Moderne* there have only been twenty cases of the disease in twenty years among native troops numbering 235,000, while, during the same period, the European troops had sixty-two cases with two deaths. Even in France this disease is not as grave, nor does it occur so frequently in epidemic form as in Great Britain."

A NEW DISEASE.

THE *Edinburgh Medical Journal* has the following note :—

"This disease, restricted as it is to certain parts of Japan, has hardly yet been heard of in Western countries. Dr. Tanaka made his first observations on the disease about seven years ago, and called it a peculiar form of malaria. He has continued to work at it, and in the *Centralbl f. Bakteriol. u. Parasitenk.*, Jena, 28th October 1899, Bd. xxvi, S. 437, he adds a much more complete contribution to its pathology. Its onset is sudden, being generally ushered in by a chill, followed by an abrupt rise of temperature. In a few days the patient is severely ill, and an eruption appears on the third to seventh day. Its resemblance to the exanthemata is thus obvious. The type of rash is urticarial, with swelling of the lymphatic glands, redness of the face, and congestion of the conjunctiva. The tongue becomes rapidly dry, and there is a gradually developed anorexia and constipation. The pulse and respiration are both accelerated, and there is generally a well-marked acute bronchitis. Acute nephritis follows, and death generally supervenes (in from 40 to 70 per cent.) in ten to thirteen days. Tanaka has found that the disease is associated with a minute moth, which is widely prevalent in the affected region. It bites like the mosquito, and makes a small punctured wound in the skin, and thus probably infects the victim. He has found a bacillus, a proteus, resembling the *proteus hanseri*, which he regards as the true causal agent. He has failed to find any plasmodium, and gives, with illustrations, a full account of the biological characters of the bacillus, which he considers to be the true cause of the disease, it being introduced by the moth in question, after the manner of the *plasmodium malariae*, by the bite of certain species of mosquito."

"MALARIAL HÆMATURIA."

THE *New York Medical Journal* during February contained one of the most extraordinary articles on malarial hæmaturia which it has ever been our fortune to read. On seeing its title we turned to it, expecting to find an article of interest on what is generally called haemoglobinuria, but instead we find a most extraordinary jumble of literature, ancient and modern, on a severe form of "malarial fever" which, according to our author, is extremely common in the United States, and which we are told is prevalent in India "to an alarming extent." The cases described seem to be of the kind which used to be described as "bilious remittents," but apparently in the States severe hæmaturia is a very common symptom. In fact some of the cases described might pardonably be mistaken for attacks of yellow fever. The evidence that this formidable fever is malarial in the modern sense of the word, is not altogether convincing, a suspicion which is borne out by the very vague ideas our author has on the etiology of malaria. "There springs," he says, "from the soil an enemy, which though silent and unseen, instilling into the system a virulent poison which deteriorates the constitution of those whom it does not immediately kill."

We have perhaps quoted enough of this article, which we wonder how it found its way into the pages of a paper of the scientific repute of the *New York Medical Journal*.

Truly, with some people the word malaria is almost as blessed as the famous Mesopotamia of the old lady.

MAJOR G. M. GILES' BOOK ON MOSQUITOS.

WE referred recently to the book on mosquitos which is being brought out by Major G. M. Giles, I.M.S., F.R.C.S. Its publication is now announced. It is entitled "A Hand-book of the Gnats or Mosquitos." It is mainly intended for the use of students of tropical medicine, and gives an account of the anatomy and life-history of the culicidae. It is very fully illustrated, with eight full-page plates and numerous figures in the text. It is (we consider wisely) written from the point of view of the ordinary medical man and not from that of a strict systematic zoologist, and a chapter is devoted to an explanation of the technical terms used in describing dipterous insects. Over a hundred pages are given to a description of the anatomy and habits of mosquitos and the best methods of observing them. In the second part of the book, descriptions are given of over 240 species, and the members of each genus are so tabulated as to enable the amateur naturalist to identify the specimens he may catch.

In every way the volume promises to be most useful to practitioners in the tropics, and

MAY 1900.]

CURRENT TOPICS.

Major Giles' book should go far to make easier the study of malaria and elephantiasis, two diseases for the study of which the profession owes much to the Medical Services in India.

AN AMERICAN VIEW OF PLAGUE IN INDIA.

The New York Medical Journal (February 3rd) contains an interesting account of the visit to the plague centres of India of Drs. Barker and Flint of the Johns Hopkins University. The article is copiously illustrated and written with full appreciation of the good work done by medical men in India. It points out that the American Colonies of Manilla and Honolulu have recently become affected direct from China, and that the sanitary conditions of these two places favour the spread of the disease. "Only the most stringent measures on the part of the American Sanitary Officers can prevent the outbreak of serious epidemics, and the repetition of scenes like those seen at Poona."

DR. JOHN ATTFIELD, F.R.S., the Editor of the *British Pharmacopœia*, has issued another report on the progress made toward the publication of the Indian and Colonial Addendum which is now being got ready for publication. We have on two former occasions referred to this addendum, and we may hope that the official recognition of many Indian substitutes for official drugs may lead to a better understanding of their therapeutic value.

We have received a specimen copy of the first number of the *Bibliographia Medica*, the French publication which is to replace the defunct *Index Medicus*. It is to be published in monthly parts, and contains a most complete international classification of medical periodical literature. It is a work which no medical library can afford to be without. It is published at the *Institut de Bibliographia*, 93, Boulevard Saint Germain, Paris.

THE Publishers of *Treatment* announce that that journal will in future appear as a monthly in the second week of each month, under the editorship of Dr. L. Freyberger. As its name implies, the journal is devoted to the therapeutic side of medicine and surgery, and consists of original articles, and a periscope of treatment written by specialists in each subject.

We have also received the first two issues of *Tuberculosis*, the journal of the "National Association for the Prevention of Consumption, &c." It chronicles the progress of the N. A. P. C. and gives full reports of the various meetings in favour of the movement all over England and the Continent.

IT is announced that a British Congress of Tuberculosis will be held early in 1901.

We note that Mr. Treves tells us that the treatment of dysentery by sulphate of magnesium is now the most approved treatment in Natal in the military hospitals. We are at a loss to understand why Mr. Treves should describe this treatment as painful. In our experience it is the tenesmus, which is relieved by the salines that is painful.

THE forthcoming report on Calcutta Malaria, by Capt. L. Rogers, I.M.S., F.R.C.S., promises to be very interesting. In spite of fish the anopheles has been found in more than half the tanks in a suburb of Calcutta, and at a time of year when malarial fevers are not common. It also appears that filtered water drinkers in a malarious tract suffer much less from fever than those who drink river water, and the latter much less than those who drink tank water. So that possibly it may turn out that the main function of the mosquito may be to take the organism back to the water, in which case our chances of fighting the disease will be better. It would be a well-nigh hopeless task to destroy all the mosquito larvae in the tanks of Calcutta.

The Lancet states that Dr. A. H. Spanier of Zanzibar has discovered a larva which preys upon the mosquito larva to a formidable extent. We hope we will hear more of this useful larva.

THE deSoysa Bacteriological Institute, presented to the Government of Ceylon, by J. W. C. de Soysa, Esq., J. P., in commemoration of the Diamond Jubilee, was opened by the Governor in January 1900. When shall we be able to chronicle the same for the Pasteur Institute of India?

It is to be hoped that it will be possible to have a thorough investigation of the outbreaks of enteric in the camps in South Africa. The causation of the enteric, which occurred during the Tirah Expedition, has never been satisfactorily explained.

THE water-supply at the great Base Camp at De Aar is peculiar. It is very hard, contains a large amount of mineral matter, and nitrates in abundance, but no nitrites. It gives all newcomers severe griping and purging—complaints which pass off in a few days.

PROFESSOR GRASSI's book on the natural history of the malarial parasite, and the anopheles

will shortly appear. The English translation, by Dr. L. W. Sambon, will be brought out by Messrs. Macmillan & Co.

THE Liverpool School of Tropical Medicine is sending out another malarial expedition, this time to the River Niger, one of the most malarious places in Africa.

UP to the first week of March 1900, in all 950 plague cases have been detected under the revised system of railway inspections in the Bombay Presidency. In one week in Bombay in March two cases of plague and 243 cases of small-pox were detected by medical inspection of 1,953 vessels in Bombay harbour.

THE Editor of this Gazette has been appointed to act as Statistical Officer to the Government of India in the Medical Department, vice Lieutenant-Colonel D. Wilkie, I.M.S., who goes on three months' privilege leave. Letters, &c., for the Editor may be addressed to him, c/o Messrs. Thacker, Spink & Co., SIMLA, up to the middle of July next.

Reviews.

A Contribution to the Surgery of Fractures and Dislocations of the Upper Extremity.

—By J. E. PLATT, M.S., Lond., F.R.C.S. London : H. K. LEWIS, 1899.

THIS volume furnishes an analysis of about seven hundred consecutive cases observed at the Manchester Royal Infirmary by the author whilst holding the position of Resident Surgical Officer at the Manchester Royal Infirmary.

The subject of fractures occupies the first and greater portion of the work. The forms of fractures occurring at different situations are serially considered with very complete tables of all the cases under observation, showing personal particulars with the method of treatment and the result obtained. The value is enhanced by a short account of difficulties to be overcome in treatment, the complications and sequelae of the different injuries. The fractures at the lower end of humerus are fully considered, and rightly too, for they often give rise to great difficulties in diagnosis, many would fully agree. In his hands this method has yielded excellent results.

Most of the fractures under his treatment were kept up for a period of three weeks only with good results. It would be better to make the period longer if the patient's bones tend to be fragile as among the ordinary ill-fed natives of India. The chapter on Colles' fracture repays study. The directions for the application of splints are sound. The author discards

all other splints in favour of simple straight ones, their width being a most essential point. Their width should be that of the forearm at the wrist, not near the elbow. In the section on dislocations Kocher's method for reduction of dislocation of the shoulder has proved most satisfactory, and that too in many cases without the aid of an anaesthetic. The secret of success in this method is undoubtedly to perform the movements of the three stages slowly, gradually, with an even amount of force so as to avoid any sudden starting of the muscles of the injured joint.

The dislocations of other joints are serially considered. The value of the work is much enhanced by illustration of the text with many excellent skiagrams, and by list of references at the end of each chapter. The author is to be congratulated on having shown what an amount of useful information may be collected from the every-day work of the house staff of a large general hospital.

A System of Medicine.—By CLIFFORD ALLBUTT, Vol. 8, with an Appendix on Malaria. MACMILLAN & CO., London, 1899.

IT is hardly necessary to say much in praise of this the concluding volume of Professor Allbutt's great System of Medicine. We have already in the past few years frequently expressed our opinion on this work, which so thoroughly represents English Medicine at the end of the nineteenth century. In the present volume will be found the conclusion of the portion dealing with diseases of the nervous system; after this follows the chapters on mental diseases, which will be found very complete and up-to-date. When all are good it is difficult to choose, but we would call special attention to those on dull and nervous children by Dr. Francis Warner, that on Vice, Crime and Insanity by Dr. Mercier, which reaches a high philosophical level, and several other chapters by Dr. Savage on mania, mental stupor and the toxic insanities. There is also a very sensible and level-headed article by Dr. Nicholson on "Criminal Lunacy in England," which is an admirable corrective to much that has been written by Lombroso and his school.

The next part of the volume is devoted to diseases of the skin, and a better manual on this subject hardly exists. We would specially mention those on eczema by Dr. Payne, on syphilitic eruptions by Mr. J. Hutchinson, Jour., and that on the parasitic ringworms by Mr. Malcolm Morris.

In a previous issue we quoted from Dr. Manson's appendix on Malaria; in it the reader will find a fair and impartial account of the present state of our views on malaria. Dr. Manson, after describing fully the mosquito-malaria theory, remarks, "but that this is the complete story is by no means sure. It may be asked if this alternating intervention of man and the

mosquito is always necessary ... there are places which are practically uninhabitable on account of malaria. In such places there are few, if any, inhabitants. How, if man be a necessary factor in the malarial cycle, are we to account for the malaria in such districts?" To this he replies that it is possible that in such insalubrious places some other vertebrate may take the place of man in keeping up the malaria cycle, or it may be that the intervention of man is not necessary, the malarial parasite passing without vertebrate intervention from one generation of mosquitos to another, just as the sporozoal parasite of Texas fever is transmitted from the parent to its offspring, or as the sporozoa of pebrine is passed from the silkworm moth to its eggs and caterpillar. He also makes a suggestion which may help to explain the noted outbreaks of malaria which have often followed the upturning of the soil in any great engineering projects. In such cases it may be that the malarial germ is shaken out by the digging of the soil and perhaps inhaled. In this connection Dr. Manson recalls Russ's observations on the highly resistant "black spores." It may be that these act as "resting spores" and remain dormant in some unascertained medium for an indefinite time, till the unknown appropriate conditions arrive. We quoted last month the scheme or classification of the various known species of human and avian malarial parasites.

In conclusion we can strongly recommend this volume of the System of Medicine, and beg to offer our congratulations to Professor Allbutt on the most successful conclusion of his great work.

Mentally Deficient Children; their Treatment and Training.—By G. E. SHUTTLEWORTH, B.A., M.D. Second Edition. London: H. K. LEWIS, 1900, pp. 180. Crown 8vo. Price 5s.

THE first edition of this little book was only published in 1895, nevertheless it has been for some time out of print. In the new edition the author takes the opportunity to give an account of the enquiry made by a Committee for the Education Department, and of some practical measures undertaken by the School Board of London. The book is dedicated to Seguin, whose labours at the Bicêtre Hospital in Paris gave the earliest impetus to the work of "the removal of the mark of the beast from the forehead of the idiot," and it begins with a historical retrospect. It is pointed out that in America the term "feeble-minded" is used to include all degrees and types of congenital defect; this usage has not obtained in England where "idioty" has been used officially to cover the lower grades, and "imbecility" the higher grades of certifiable mental defect. The term "feeble-minded" is used in England to apply to children who, not imbecile, yet present an amount of mental deficiency disqualifying them

from profiting from the ordinary educational curriculum.

The following is Dr. Shuttleworth's classification of mental defect (congenital) as follows:—Microcephalus, hydrocephalus, mongol or "Kalmuc" type, scrofulous cases, birth palsies with athetosis, congenital cretinism, and primary neurotic. The developmental types are eclamptic, epileptic, syphilitic (inherited), and the accidental or acquired are traumatic, postfebrile (both inflammatory), emotional and toxic. One of the most interesting chapters in this little book is that devoted to the methods of training these unfortunates; here is given full details of the methods and of the special establishments for this purpose; it is very pleasant to read in Chapter XI that so much can be done for these children. "Once an idiot always an idiot" is no longer true; on the contrary methodical training can effect wonders.

We can strongly recommend this little book to all requiring information about the training of such children, or about the numerous institutions where such training is to be obtained.

Letter—, Word—and Mind—Blindness.—By JAMES HINSHELWOOD, M.A., M.D., F.F.P.S. (Glas.), Surgeon to the Glasgow Eye Infirmary. London: H. K. LEWIS, 1900. Crown 8vo, pp. 88. 3s.

THIS monograph contains five chapters, the last four of which are papers on cases which were read before the Glasgow Medico-Chirurgical Society and have already been published in the *Lancet*. Chapter I. deals with visual memory which plays such an important part in every visual act, and which has hardly been studied with the care its importance demands; visual memory is the power of comparing present visual impressions with the memories of past impressions which have been preserved in the brain. Pathological and clinical evidence goes to show that these memories of past visual impressions are registered in definite groups within a visual memory centre, situated in the cerebral cortex, in the angular and supra-marginal convolutions. They can be called into the sphere of consciousness at will when we form what we call a mental picture or visual image, and our recognition of familiar objects depends upon the completeness of our visual memory. The visual perception centre for present impressions is, of course, situated in the occipital lobe. Memory however we now know, thanks to Ribot and Binet, does not exist as a special faculty or unity. There exist individual or local memories, e.g., memories of vision, hearing, touch, taste, smell, muscular movements, &c., and while these forms of memory are intimately connected with each other, yet they are perfectly distinct and independent of one another, so that any single one may be enfeebled, entirely lost or developed to an abnormal extent, without any of the other forms exhibiting any corresponding modification.

Each of these forms of memory occupies a distinct area of the cerebral cortex. The memories of letters, of figures, of words, of musical notes are all distinct, and any one may be lost without the others being affected. Dr. Hinshelwood's monograph contains an excellent account of various cases illustrating these facts, which are chiefly noteworthy for their purity, that is, they illustrate lesion of our memory centre only, and thus afford clear evidence of the truth of the theory outlined above.

The cases are clearly and fully related, and a complete résumé of the literature of the subject is given. The author makes a curious slip on p. 30, para. 2, in saying that the centre for visual memory of words is in the neighbourhood of the left occipital lobe. Parietal is meant as he says himself everywhere else (pp. 24, 29 and 31). The monograph dealing as it does with a subject of some difficulty has the great merit of lucidity, and can be strongly recommended to all those interested in the subject.

When to wear Glasses; or, Errors of Refraction of the Eye made easy.—By GEOFFREY C. HALL, F.R.C.S. (ENG.) Allahabad : Printed at the Pioneer Press, 1900.

In the preface to this small brochure of 42 pages Colonel Hall says that if it opens the eyes of its readers, he will be satisfied of its usefulness. It is a simple and practical guide to the determination of errors of refraction and the prescription of suitable spectacles, a short account is given of the anatomy of the ciliary body, and the mechanism of accommodation is explained on Helmholtz's theory. The various errors of refraction are then briefly dealt with, much stress is laid on the gradual training down of the ciliary muscle in hypermetropia. The shadow test and the determination of refraction by ophthalmoscopic examination being 'extremely satisfactory in the hands of experts but of no use except after practice,' and things 'that cannot be understood by the merest tyro,' are only very shortly referred to as outside the scope of the work. Colonel Hall is very much against the wearing of smoked glasses or 'glare protectors.' He says the pupil is the natural protector of the retina, and such glasses by replacing it do harm in rendering the retina unduly sensitive and the pupil sluggish and slow to act. Except in a hot dusty wind on a hot weather day he would not allow them to be worn. It is difficult to agree with the advice given to not operate on a cataractous eye when its fellow is useful. The anisometropia produced by operation is unpleasant no doubt, but diminished sensibility of the retina in an overripe cataractous eye is a permanent injury beyond recovery, and even if it is necessary to cover up either the operated eye or the sound one to obtain the satisfactory vision, the patient is then no worse off than he was before with a single

blind eye, while the retina will not be deteriorating from want of use, and he will eventually be better off than if he is left until the sound eye becomes cataractous before operating. That booklet shows signs of hasty proof correcting, and 'a dioptric' and 'a presbyopic' seem less correct than 'an astigmate' and 'a myope.' It will be found a useful and clear guide to the practice necessary before such a difficult subject can be mastered.

Difficult Digestion due to Displacements.

By A. SYMONS ECCLES, M.B. London, 1900.
BALLIERE, TINDALL Cox & Co.

THE major portion of this volume of 136 pages consists of clinical histories of cases seen by the author whose experience appears to have been more considerable than that of most writers on the subject. It is the greater pity that no attempt has been made to give us a systematic and scientific account of enteroptoses. Since Glenard in 1885 first drew attention to abdomino-visceral displacements a great deal has been written about them in France and in Germany, but so far as we are aware Mr. Treves' article in Professor Allbutt's System of Medicine is the only detailed treatment of the subject in English, and where he and Dr. Allbutt are doubtful of the value of palpation, percussion and auscultation as adequate means to the diagnosis of enteroptoses, we may well be pardoned some hesitancy in accepting all the numerous cases which Dr. Eccles claims to have recognised and treated. There is a naive simplicity about the pathology which the author propounds that can hardly be seriously accepted. He maintains throughout that the loss of fat—padding as he calls it—is the prime factor in displacements, and his treatment is mainly directed to its restoration. Padding, pressure, position—these are the keynotes of the book, which seems to have been published chiefly to draw attention to a system of treatment which would certainly relieve the digestive disturbances incident to displacements, but we fail to see how any permanent cure can have been affected without an actual shortening to their original size of the peritoneal folds and ligaments. The size of these largely depends on their tone or elasticity which must vary with the vitality of the subject, and treatment by rest, massage and dieting is just what would reinvigorate all the lax tissues of a sufferer from impaired digestion. The author ignores the initial causes of enteroptoses, but we venture to think that atony and stretching of the peritoneal folds are often direct results of difficult digestion, due to whatever cause, and that they establish a vicious circle, the displacements which ensue still further aggravating the indigestion. No purely mechanical theory can account for all enteroptoses, and indeed the causes alleged by other writers have been many, whereas one author seems to have limited him-

self to deficient abdominal pressure as the sole cause, though we believe that increased abdominal capacity with diminished contents would better describe his view of the cause of visceral displacements.

We must confess to disappointment over this volume within the compass of which much might have been elucidated that still remains nebulous, but those who have the patience to read through the detailed record of cases will be rewarded by indications as to treatment which will help them. The chapter on Sigmoid Prolapse (*sic*) will probably be most useful to practitioners in this country who will recognise the so-called prolapse as nothing more than faecal infection in the pelvis, a condition not unfamiliar to those who often make pelvis examinations; nor is the occurrence of a slight intussusception of the sigmoid colon of such unusual occurrences as Dr. Eccles seems to think. He describes conditions that must be familiar to most practitioners, but the treatment he indicates is well worthy of consideration as it is the result of extended experience and considerable success has attended it in his practice. The account of enteroptoses given in this book is inadequate, but we congratulate the author on the system of treatment by which he has relieved many sufferers.

A Manual of Surgery.—By C. STONEHAM, F.R.C.S.
In 3 vols. London: MACMILLAN & CO., 1899.
Extra Crown 8vo. Vols. I & II, 7s. 6d. net each;
Vol. III, 10s. net.

THIS is the first of a new series of Manuals on Medicine and Surgery issued by Messrs. Macmillan & Co. for the use of practitioners and students. The volumes are of a handy size, and those now issued are beautifully printed and illustrated, and elegantly bound in the same brilliant red covers with gilt tops as Allbutt's classic System of Medicine by the same publishers.

The object of this new work on surgery is to give "a succinct account of modern surgical pathology, diagnosis and treatment," and in it Mr. Stoneham also embodies the results of his sixteen years' experience as an hospital surgeon and teacher.

The book is written in an easy authoritative style, without citing any references or bibliography, and the more common operations are described in sufficient detail and attractively illustrated. The value of the book, however, as a manual is somewhat discounted by its division into three volumes, especially as the volumes are so thin that all might have been compressed into one. This reduction could all the more readily have been effected had the larger pathological illustrations been left out, including about 50 from Ziegler's work, which most readers already possess either in original or in their other text-books on pathology.

The inconvenience of this division into three distinct volumes each with its own separate index is all the greater on account of the arbitrariness and overlapping of the plan of division which is adopted. Thus, if we wish to refer say to harelip, we would naturally turn to Vol. III which is entitled "Regional Surgery;" that subject, however, is not mentioned there, but by further search it is to be found in Vol. I which is labelled "General Surgery." Here it may be noted by the way that in the description of the operation for this deformity no mention whatever is made of harelip pins. These articles, it is true, are objected to by most surgeons nowadays and silver wire used instead, but Mr. Stoneham makes no reference either to the one practised or to the other. Moreover, the account of the antiseptic treatment is given not in Vol. I or General Surgery where we would expect it but in Volume II which is entitled "Injuries."

When the reader masters this initial difficulty in the arrangement of the volumes, he will find the work an excellent account of elementary surgery. It is too elementary, of course, to serve by itself as a guide to the average operating surgeon in India. Thus the operative treatment for stone in the bladder, in respect to which Mr. Stoneham wisely advises the non-expert to prefer lithotomy, to lithotomy, has only six pages devoted to its description, and these are not illustrated. So, too, that common Indian operation, the extirpation of scrotal tumours, is not described at all.

The attractive get-up of the volumes and their excellent printing and illustrations make them a real pleasure to handle.

Surgery: Treatise for Students and Practitioners. By T. PICKERING PICK. LONGMANS, GREEN & CO., London and Bombay, 1899. Pp. 1176. Price 25s.

THIS treatise contrasts sharply with the foregoing one in several ways. Dealing with the same subject and for the same class of readers but from the more exhaustive standpoint of "a useful work of reference," and comprising almost twice the amount of printed matter, it nevertheless forms only one volume which although somewhat bulky, scales half-a-pound less than all three volumes of the 'Manual' put together. On the other hand, its illustrations leave much to be desired, and compare very unfavourably with the elegant and artistic illustrations in Mr. Stoneham's work. Most of them are crude and diagrammatic; still they serve the purpose of enabling the reader to follow clearly the descriptions of the author.

Mr. Pick has an eminently practical way of approaching his subject, and whilst giving a brief résumé of the various current modes of treatment, he gives his reasons for preferring one or other or his own particular practice as

warranted by his exceptionally long experience as an operating surgeon in St. George's Hospital. The result is a manual which will be most helpful alike to students and to the general practitioner.

One of its most serious defects as an exposition of modern surgery is its failure to give sufficient details of the antiseptic treatment of wounds, a procedure of the most vital importance, and one which has undoubtedly contributed more than any other (excepting perhaps anaesthesia) to the progress of surgery. Mr. Pick, beyond a somewhat deprecating reference to Listerism and a short description of several chemical antiseptics, gives no directions on those essential and indeed elementary matters of modern surgery, namely, the technique of preparing the surgeon as well as his patient for the antiseptic operation, and the exact details for the preparation of the necessary dressings, &c. As so much of the successful result depends on attention to these minute details in this respect Mr. Stoneham's Manual is more up-to-date.

We also expected to see more ample reference to the use of Röntgen Rays in surgery. This agent is merely referred to incidentally in one line in connection with gunshot wounds, whereas these rays have proved to be of much value to the surgeon in the diagnosis of obscure fractures and dislocations, and for calculi in the kidney and impacted foreign bodies in various viscera and tissues. Local anaesthesia, too, might have been noticed in more detail.

Current Literature.

PATHOLOGY AND BACTERIOLOGY.

On the Detection of the *Bacillus Thypi Abdominalis* in Water and other Substances.—By E. H. Hankin, M.A. (*Centr. f. bakt. B. XXVI*, 1899.)—Mr. Hankin's frequent success in isolating Eberth's bacillus from water and other substances has caused his paper on the subject to be looked forward to with great interest, and the delay in publishing his method has been due to his having waited with commendable caution until some of the organisms which he had isolated had been pronounced by such high authorities as Professors Pfeifer and Wright to be genuine typhoid microbes, which they have now done. The method employs no new media, and it differs in details only from others which have long been in use as the author modestly states in his opening paragraph, but in bacteriology it is just the details which make all the difference between success and failure. The method is essentially a modification of that known as Parietti's, and the essential improvement is that instead of taking that tube which contains the largest number of drops of Parietti's solution which has become turbid after 24 hours, for further examination, with the very usual result that the enteric organism is not found, Mr. Hankin chooses tubes which contain a smaller amount of the solution than the maximum-permitting growth, with the result that there is a far better chance of isolating the organism. The details of the process are as follows:—To five tubes, each containing 10 c. c. of

neutral bouillon, are added 0, 1, 2, 3, and 4 drops of Parietti's solution respectively, to each of which a few drops of the fluid to be tested are added, and after being covered with rubber caps they are incubated at 37° for 24 hours. Next day a tube has to be chosen for further use, and that which contains the highest number of drops of Parietti's solution, but if turbid should be rejected, contrary to the advice of the originator of the method, usually the next tube in the series below it should be chosen, especially if the turbidity is uniformly distributed. On the other hand, those tubes which have a thick scum on the surface, or in which the growth is only visible in the deeper layers, are not suitable. Usually the tube containing 2 or 3 drops is the one chosen, while those containing the larger quantity should be employed if it is required to isolate *B. coli communis*. If only the tube with one drop is turbid after 24 hours, as a rule, the enteric microbe will not be found. With the chosen tube a second series of five bouillon tubes containing a successively increasing number of drops of Parietti's solution, beginning with the number used in the selected tube, are inoculated from the former, and after incubation as before a choice is again made in the same manner as in the first series, and this process may be repeated a third and a fourth time if desired, although usually Mr. Hankin uses that chosen from the second series for inoculation on to agar-agar, having a fairly dry surface so as to produce isolated colonies. This is best accomplished by passing the needle with a drop of the bouillon culture in a zigzag manner from the bottom to the top of the agar surface. On the following day from 5 to 20 litmus agar-agar tubes are inoculated from the most likely looking colonies, the medium being made as follows: To a litre of liquefied nutrient agar-agar twenty-five grammes of litmus and thirty grammes of milk sugar, which have been ground together in a little water and strained through a piece of fine cloth, is added, and after mixing it is distributed in test tubes, which when sterilised are placed in a sloping position. Those tubes which turn red within from 24 to 48 hours incubation are rejected, together with any unlikely looking growths, such as those with a faint yellowish metallic lustre, those which when touched with a needle draw out into threads, or a large lump of which stick to the needle when the colony is touched, and those that have a noticeable smell. The cultures in the remaining tubes which resemble those of enteric organisms are next microscopied, and those which obviously differ from the microbe of typhoid are also rejected. Finally the remaining growths are inoculated into milk, potato, etc., and those which also stand these tests are lastly tested as to their capacity to become coagulated by the action of antityphoid serum, a control tube always being used to avoid the fallacy of false reactions which are given by some other organisms.

By the above method Mr. Hankin has frequently found the enteric organism in piped water-supplies which have been filtered through sand, but it has generally been absent from highly polluted water of bazar wells, although it can be isolated from very dirty water, for the author found it in the washings of a dirty dishcloth, as well as in the foreshore of the Jumna, a little above the intake of the Agra water-works. He also gives a very instructive table showing the results of a weekly examination of the Agra water side by side with the weekly number of admissions to the station hospital for enteric fever from January to September of last year, from which it appears that the organism was most frequently detected in April and May when most of the cases of enteric occurred, although, on the other hand, it was also found on several occasions when no cases of the disease had been admitted, but it must be remembered that efforts were made to prevent the soldiers drinking the standpipe water, an alternative supply from a protected well having been supplied. The organism was also found several times in "boiled" water, owing to its being placed in infected vessels such as of porous

earthenware. The author concludes that it is probable that some at least of the cases of enteric were due to the microbes he found in the piped water-supplies, for in several previous years he had always found the enteric microbe in the Agra pipe water, on several occasions during the usual April and September outbreaks, but that it is also certain that they may exist in the water in a condition in which they are not capable of producing infection while other sources of infection may also exist. Like that of cholera, then the organism of enteric fever may retain or lose its power of producing infection when it exists in non-living media under conditions which are not yet understood, and which only such long continued and patient investigations such as Mr. Hankin is carrying out at Agra is likely to elucidate, efforts which it is to be hoped the publication of this method will lead other observers to imitate.

(Parietti's solution consists of : Carbolic acid, 5 grammes; hydro-chloric acid, pure, 4 grammes; distilled water, 100 grammes.)

LEONARD ROGERS, M.D., M.R.C.P.

EXTRACTS FROM THE FOREIGN MEDICAL PRESS.

Yellow Fever plus Malaria.—Agramonte relates six cases of such double infection. In all the blood was examined every day. In two cases the malarial parasite was not found until the attack of yellow fever had passed off, and in these the 'latent malaria' had, in Agramonte's opinion, no influence on the course of the attack of yellow fever.

In the other four cases the malarial parasite was found during the attack of yellow fever, and in these the tendency to haemorrhage (black vomit) was greater than in an uncomplicated case, and the duration of the disease was much increased. The heart's action too was much accelerated, whereas in an ordinary case of yellow fever it tends to become slowed.

Agramonte is of opinion that 20 per cent. of the cases of yellow fever, which occurred during the recent epidemic at Santiago de Cuba, were cases of double infection.—[*Il Progresso Médico*, October 1899.]

Methylene-Blue as an aid to Diagnosis.—Reynaud and Olmer have experimented with methylene-blue in 343 cases. They find that the elimination of the dye by the kidneys is of value in determining the existence of the following affections :—

(a) Interstitial nephritis, arterio-sclerosis, &c., in which the dye appears in the urine late, and continues to stain it for a longer time than normal. This peculiarity is also seen in many cases of chronic diffuse nephritis.

(b) In liver affections, where the hepatic cells are affected organically or functionally, the elimination of the dye takes place in an intermittent manner.

(c) In acute diseases—infectious or other—the manner of elimination will enable us to judge of the integrity or otherwise of the kidneys, sooner than can the albumen test of the urine.

The variety of nephritis from which the patient is suffering can scarcely be diagnosed by the methylene-blue test.—[*Marseilles Médical, rep. in Tribune Méd.*, 8th November.]

Widal's Reaction in Malaria.—Mennella, speaking at the Tenth Congress of the Italian Medical Association, stated that he had obtained this reaction with the serum of eight cases of grave malaria, in which there was gastro-intestinal disturbance. All recovered after one or two intra-muscular injections of 15 grains of quininæ dichlorid; therefore they were not cases of enteric fever. Besides he notes that (a) the reaction may not occur in a case of undoubted enteric (Vanlair); (b) it may be obtained only towards the end of a true case of enteric (Widal, Blumenthal); and (c) the reaction may be obtained from normal serum, or serum taken from a case

other than enteric (Gasser, Buonomo, Dineur).—[*Trib. Méd.*, 8th November.]

Albuminuria and Diabetes.—Schupfer has studied eight diabetics who had albuminuria, and forms the following conclusions :—The albuminuria has no influence on the course of the diabetes. If the albuminuria be abundant, and the sugar disappears from the urine, we may conclude that we have to do with a case of gouty glycosuria in which both the albuminuria and the glycosuria are due to the gout; but are independent of one another. "Renal diabetes" is really gouty nephritis with slight glycosuria. *Diuretin* facilitates the passage of glycose through the kidneys, especially if these be diseased.—[*Ibid.*]

Splenectomy.—Speaking at the Thirteenth French Surgical Congress, Jonnescos, of Bucharest, related his experience of this operation, which he had performed 29 times since 1896. Twenty-eight of these cases had malarial enlargement of the spleen, and the other case was one of hydatid. In most of the cases the operation was performed because of the failure of medical treatment and intolerable pain. Ten patients were in a relatively good state for operation and eight recovered. In twelve cases there was profound anaemia, yet seven recovered, and five others were cachectic, yet four recovered. Both cases in which the operation was performed for leucocytæmia died. The age of the patients ranged between 14 and 62 years, and the spleens removed weighed from 850 gm. to 5,750 gm.; but Jonnescos did not find that the size of the organ had any effect on the results of the operation.

In 7 out of the 29 cases the organ was mobile; but was never ectopic.

During the operation the pleura was opened and sutured three times, and two of these cases died.

The most frequent complication after operation was intense pulmonary congestion which occurred in seven cases of whom four died.—[*Gaz. Hebdomadaire de Médecine et de Chirurgie*, 9th November.]

When will one of the I.M.S. remove the spleen for malarial enlargement unaffected by medical treatment?*

On Dysentery in the Tropics and its connection with Liver Abscess.—Marchoux working at St Louis in Senegal treated 47 cases of dysentery in the military hospital in the summer of 1898, of these two cases ended fatally.

The stools of all the cases contained amoebæ, which Marchoux vainly sought for in ordinary diarrhoeic motions, or those produced by a purgative.

The administration to cats per os or per rectum of $\frac{1}{4}$ — $\frac{1}{2}$ cc. of these dysenteric stools caused in two or three days the appearance of muco-sanguinolent motions containing the amoebæ. The "cultures" were passed through a series of cats, in one case through 19; and in every case the same appearances were observed, 82 cats being experimented on in all.

The autopsy showed ulceration of the large intestine chiefly in the cæcum and rectum; but sometimes throughout the whole of the colon.

In cats which had been ill for some time, fifteen days or so, there was generally found hepatic abscess, a single large one and several small ones, and it was noted that these abscesses were found more frequently in rectal than in cæcal cases.

In the abscesses amoebæ were present, and also sometimes *b. coli*, *staphylococci* and *streptococci*.

Rectal injections of a portion of the contents of an abscess mixed with physiological solution of salt or bouillon always gave rise to dysentery; but when the *b. coli*, or *staphylococci* or *streptococci* alone were administered no intestinal lesion was produced. Rectal injections of dysenteric stools which had been kept at

* This has been done, we understand, at Durbhunga, by Major Harold Brown, I.M.S.—Ed., I.M.G.

45°c. for 35 minutes always failed to produce dysentery.—[*Ibid*, 16th November.]

Serotherapy in Plague.—Calmette, of Lille, reports that he has obtained excellent results at Oporto from the employment of Roux' serum *antipesteux*. After many weary months of experiment Roux hit upon the plan of injecting a considerable quantity of plague bacilli, killed by heat, into the veins of a horse. After nearly a year's dosing, it was found that the horse's serum was active in combating infection by *b. pestis*— $\frac{1}{2}$ cc. was sufficient to protect a mouse against an inoculation with virulent culture of *b. pestis* obtainable, and 1cc. was always enough to clear the blood of the inoculated mouse of all *b. pestis*, even when the serum was injected sixteen hours after inoculation with the virus.

Before the employment of the anti-plague serum of Roux at Oporto the mortality of plague cases was 33 per cent.; since the serum began to be used the mortality has been only 13 per cent. Fourteen cases of 104 inoculated with the serum having died; of these fourteen, nine cases were known to Calmette, and these died thus: three within sixteen hours of admission to hospital; one within 24 hours of admission; one of plague-peritonitis; two of plague-meningitis; one recently delivered of streptococci, puerperal infection *plus* plague, and one of tubercular meningitis *plus* plague.

The injection of the serum was repeated each day so long as the temperature gave reason for anxiety. The following is the graphic description of the results of treatment. On a culture of a drop of blood taken before the injection of the serum—as many as 32 colonies of plague bacilli may be found; 24 hours after the injection one rarely finds more than one or two *microbes*; 48 hours after the first injection, i.e., after the second injection has been given, *all cultures* of the blood fail; and in the buboes one finds, instead of free bacilli, only bacilli within the polynuclear leucocytes. As the serum itself, being heated to 58°c. to ensure its "keeping," has no bactericidal action, Calmette concludes that its action is to determine an intense phagocytosis in the organism of a patient attacked by plague.

The usual dose for each injection was 40cc.; but in bad cases this quantity can be greatly exceeded. In one case, a woman of 57, 320cc. were given in six days, and although the case was only seen on the fourth day and was one of grave septicaemic plague, recovery was brought about.

In cases of pneumonic plague the serum is injected in doses of 20cc. directly into the veins, and Calmette lost not a single case of pneumonic plague thus treated, although three were in a very bad state indeed.

Roux' anti-plague serum has a brief preventive power—the immunity confined by an inoculation being immediate and lasting, 20–25 days.

At Oporto the physicians and the staff of the laboratories of bacteriology and hygiene and those engaged in disinfection and in the disposal of the dead were all inoculated, and none were attacked by plague.

After the inoculation in the majority of cases there is no reaction; but sometimes on the seventh or eighth day a slight urticaria appears—such as may occur after inoculation with normal serum.

With regard to Haffkine's anti-plague inoculation, Calmette points out the following undesirable: (a) the intense reaction and great pain caused by the inoculation in a healthy individual; (b) the fact that if the person inoculated have already been infected, the inoculation hastens and much increases the gravity of the attack. However, he thinks that the Haffkine and Roux sera may advantageously be combined, and then the tonic effects of Haffkine's serum are obviated.

As he points out the great merit of the above detailed treatment is that one can thereby successfully vaccinate against plague, and, if it has already been contracted, can hope to cure it by Roux' serum.—[*Ibid*, 5th November.]

W. D. SUTHERLAND, M.B.

Correspondence.

INTRACRÉBRAL INJECTION OF ANTIVENINE.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

Sir,—In March number of the Gazette, Major Baker, I.M.S., reports on a case of snake-bite unsuccessfully treated by antivenine, and thus concludes his remarks:—

"The curative properties of the serum, when poisoning is in progress, I suspect to be little or *nil*"

In this case antivenine injection was started about three hours after the bite, and all injections, as I understand, were made subcutaneously.

My object in writing is to draw attention to another mode of injecting antivenine, i.e., directly through the brain. A hole is drilled through the skull and the antivenine injected deep into the substance of the brain.

This mode of injection I saw when I was at Netley, and the results were quite satisfactory.

I hope this will induce some to adopt this way of injecting the serum, and I think it would be doing a public good if the results obtained are reported in the Gazette.

Yours, &c.,

P. ATAL,

Lieut., I. M. S.

SAMANA.

RATIONAL DRESS FOR THE SOLDIER.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

Sir,—I have to thank Captain MacNab, I.M.S., for correcting me in your January number as to the dress worn by the Corps of Guides on their famous marches.

I regret that I was misinformed and wish to withdraw the statement to which exception has been taken.

If sufficient interest should be shown on the subject of rational dress for the soldier, (and it seems to have aroused none, except in America,) to induce me to rewrite the article referred to, I will omit the words objected to.

I should say, however, that I arrived at Mardan, the Guides station, about a week after their record march to Malakand in 1897, and that I heard the story there, on very good authority. I have also heard it frequently repeated in military circles.

No one who has read of the Guides, or seen them on active service, would dream of saying anything to detract from the reputation of a regiment where pluck and endurance were the admiration of the whole army.

Captain MacNab says that to assert that the soldiers of the Guides marched in the rational dress of civilians would be to detract from the credit due to them for their famous marches.

With that I entirely agree. That is the very point I am advocating; that it is far more fatiguing to march in the warm, tight, and belted uniform of a soldier than in the cool, loose, and open dress of a civilian.

I am very glad to find my views supported by so valued an opinion as that of Captain MacNab.

I see that the Yeomanry going to the Cape are wearing bandoliers instead of belts and pouches. If they will only be allowed to wear the haversack, water bottle, and bandolier inside their unbuttoned coats or go without coats altogether we will not hear so many complaints from them as from the regular troops of the unbearable heat and thirst.

When I hear that cricketers or rowing men, or any working men find that they can work best in warm tight coats strapped around them, I will begin to think the dress of the soldier a suitable one. Until then I will continue to think that a cool light and loose dress is the most suitable for the soldier as well as for the civilian, when undergoing severe muscular exertion.

I am, Sir,

Yours, &c.,

C. J. M'CARTIE, M.D.,

Lieut.-Col., I. M. S.

POISONING BY CASTOR-OIL SEEDS.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

Sir,—The British Medical Journal for February 10th, 1900, received by last mail, records a case of poisoning which proved fatal after eating a couple of castor-oil seeds. The two following cases may therefore prove of interest: I—Havildar B. K., "A" Co., age, twenty-nine, 8th Bombay Infantry, Ahmednagar. II—Private D. K., "A" Co., age twenty-two, of the same.

MAY 1900.]

SERVICE NOTES.

Regiment, were both admitted to the regimental hospital on February 10th, 1900, for poisoning by eating castor-oil seeds. The Regiment had been out for a field day since early morning on the 9th, and, after bivouacking out for the night, were returning to their Lines on the morning of the 10th. As they passed through some irrigated land where the castor-oil shrubs were growing, these two men picked the seeds and, finding them sweet, ate several.

This occurred at 8 A.M. Havildar B. K. states that he ate a handful, probably about twenty-five to thirty seeds, or more. Private D. K. states that he ate only eight or ten seeds.

About three-quarters of an hour later they noticed a bitter taste in the mouth and began to feel giddly. Shortly afterwards violent vomiting and purging commenced in each case, and they were placed on stretchers and taken to hospital with all possible speed.

They were first seen by me at 1-15 P.M. The Havildar was then comatose and almost pulseless, skin moist, extremities cold and pupils dilated. After admission no further vomiting occurred, but he passed two stools which contained almost pure mucus and blood. The condition of the Private was less serious : he was semi-comatose and appeared to be in great pain, but passed no blood in his stools after admission.

The treatment adopted in each case was injection of morphia gr. $\frac{1}{2}$, an ounce and a half of brandy subcutaneously, mustard plaster to the cardiac area, hot poultices to abdomen and hot bottles to the extremities.

On regaining consciousness they complained of intense pain all over the epigastric region and the abdomen. Tr. opii m. xx and gruel were given as soon as they could swallow and the injection of morphia was repeated next morning.

Both men made a good recovery and were discharged from hospital on February 16th.

On referring to an Indian text-book of Toxicology, I find it stated that these seeds are highly poisonous ; each seed is said to contain $\frac{1}{2}$ grain of ricin, and three seeds proved fatal to an adult in forty-six hours in a case recorded.

Yours &c.,

L. T. R. HUTCHINSON, M.A., M.B., B.C. (Camb.)

LIEUT., I.M.S.,

Oifg. Medl. Ofcr., 8th Bo. Infantry.

AHMEDNAGAR,

March 9th, 1900.

TREATMENT OF GUINEA-WORM.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR.—A good deal of literature has been written at odd times in Medical journals on the subject of Guinea-worm and its treatment, etc., by various methods, and as I have had a fair number of cases under treatment at different times I tried the various remedies recommended, *i.e.*, injection of carbolic acid and hydrargyri perchlor, around the tissues (Emily's treatment) ; injection of alcohol coloured with fuchsin direct into the worm (recommended by Captain Foulkes, I.M.S.) ; formation of a small well of water over the ulcer, this I did by inverting a small wide mouthed bottle half full of water over the ulcer and fixing it in position with strapping ; also the old method of slowly rolling the worm out prematurely. But I found that none of these methods were satisfactory—in nearly every case the worm broke or burst. The last method of rolling the worm out prematurely is absolutely unscientific, and the method of injecting the worm with alcohol to harden it seems to me going against the nature, and is throwing a greater strain on the already over-distended uterus.

The only method that appears based on a scientific principle of treatment is that of "irrigating the ulcer and aiding nature." Dr. Patrick Manson mentions this in his article on Guinea-worm in *British Medical Journal*, November 30th, 1895. And I find that by simply keeping a small stream of water trickling over the ulcer that the stage of parturition is very much accelerated and the parent worm extracted in about seventy-two hours. This method can be done as follows:—Suspend an irrigation can over the ulcer and allow the water to drop close to the edge of the ulcer when the uterus will be seen to be elongated and contracted intermittently and give birth to broods of embryos exactly as described by Dr. Manson with his experiments in his paper above quoted.

I append a diagrammatic sketch of the embryo as it appears in parturition,* but the only point that I cannot verify is as regards the shape of the embryos, which appeared to me to be rounded. I began the notes for this article early last year and towards the end of the year I got a copy of Dr. Manson's Edition 1899 on Tropical Diseases in which he says the embryos are distinctly flattened, and I regret to say I have not come across a case of Guinea-worm since getting his book to study this point further. But the main point I wish to bring to notice is the "irrigation

method" of treatment for Guinea-worm which apparently supersedes all other methods.

I may mention that these notes were originally compiled from independent observations of my own, and the articles by Dr. Manson quoted above verify these observations to a great extent.

Yours, &c.,

CHAS. A. JOHNSTON, M.B., D.P.H.,

SECUNDERABAD, }
March 6th, 1900. }

CAPT. I.M.S.,
5th Lancers.

Service Notes.

The following is a list (complete as far as possible) of the members of the medical profession, civil and military, who have been killed, died from disease, or been wounded during the war in South Africa, up to the occupation of Bloemfontein :—

KILLED IN ACTION.

MAJOR EDWARD WOLFENDEN GRAY, R.A.M.C., was killed in the action of Farquhar's Farm on 30th October.

CAPTAIN MATTHEW LOUIS HUGHES, R.A.M.C., was killed in the action on the Tugela river, 15th December.

LIEUTENANT HUGH BERNARD ONRAET, R.A.M.C., was killed on 27th February in the attack on Pieter's Hill.

CAPTAIN R. H. E. G. HOLT, R.A.M.C., died from wounds received during the operations at Modder river on 21st February.

DIED FROM DISEASE.

LIEUTENANT G. W. G. JONES, R.A.M.C., died from enteric fever on 20th February at Ladysmith.

MAJOR CHARLES POPE WALKER, R.A.M.C., died at Ladysmith from dysentery on 5th January.

CAPTAIN G. S. WALKER, R.A.M.C., died from enteric fever at Ladysmith on 23rd February.

WOUNDED.

LIEUTENANT J. G. BERNE, R.A.M.C., was wounded during Lord Roberts's advance on Bloemfontein on 10th March.

MAJOR J. H. BRANNIGAN, R.A.M.C., was wounded slightly at Colenso on 15th December.

CAPTAIN J. E. CARTER, R.A.M.C., was wounded near Paardeberg during Lord Roberts's advance between 16th and 18th February.

CAPTAIN C. DALTON, R.A.M.C., was severely wounded at the operations at Chieveley on 23rd January.

ASSISTANT-SURGEON J. DISCARGIE (Colonial) was wounded at Ladysmith on 30th November.

LIEUTENANT H. E. M. DOUGLAS, R.A.M.C., was wounded at the battle of Magersfontein.

LIEUTENANT G. H. GODDARD, R.A.M.C., was wounded near Paardeberg during Lord Roberts's advance between 16th and 18th February.

LIEUTENANT HORNABROOK (Colonial) was wounded at Ladysmith on 6th January.

LIEUTENANT T. C. MACKENZIE, R.A.M.C., was wounded in the Koodoosberg reconnaissance on 7th February.

CIVIL SURGEON H. MOORE was wounded in the engagement near Britstown on 6th March.

CAPTAIN SAMUEL GUISE MOORES, R.A.M.C., was wounded in the battle of Modder river on 28th November.

* Not printed.—Ed., *Indian Medical Gazette*

MAJOR A. S. ROSE, R.A.M.C., was wounded in the action at Potgieter's Drift.

MAJOR WAITE (? WHAITE), R.A.M.C., was severely wounded during Lord Roberts's advance on Bloemfontein on 10th March.

MAJOR C. G. WOODS, R.A.M.C., was wounded in the engagement at Ladysmith on 6th January.

ON the retirement of Lieutenant-Colonel E. G. Russell, M.B., I.M.S., it is understood that Lieutenant-Colonel G. F. Harris, I.M.S., now on leave, will return to the Calcutta Medical College as Professor of Materia Medica and Clinical Medicine.

COLONEL J. LEWTAS, M.D., I.M.S., late Civil Surgeon on furlough, has been asked to serve at Nettie owing to the emergency created by the war. He joined the Medical Division on 2nd March. The *Lancet* describes him as "Second Surgeon to the Calcutta Hospital" (*sic*).

THE following was the arrangement described by Sir William MacCormac for the water-supply of No. 4 General Hospital at the Mooi River Camp :—

"A large water-cistern has been erected upon a 50 feet platform, from which the water is carried in underground pipes by gravitation. The supply of water to the cistern is pumped up from the river. The drinking water is filtered through sand and cloth in a special cistern. It is conveyed in pipes to the kitchen, where it is boiled and afterwards passed through a Berkefeld filter."

LIEUTENANT ONRAET, R.A.M.C., who was killed at the fighting for the relief of Ladysmith, was the son of the late Mr. Pierre Onraet, formerly an indigo planter of Bhagalpur. Lieutenant Onraet was born at Bhagalpur, in the house now known as the "Magistrate's house."

THE following remarkable case of the wound of a medical officer is described by Sir William MacCormac :—

CASE 10. *Wound of the abdomen.*—Captain —, R.A.M.C., was wounded on 23rd January, near Colenso, at a distance of 100 yards, whilst he was bending over in the act of dressing a wounded man. The wound of entrance was through the right rectus abdominis muscle, one inch below the costal margin and one and a half inches from the median line. The wound of exit was one inch above and one inch behind the centre of the right iliac crest. The symptoms were *nil* throughout, although it was difficult to suppose that the ascending colon escaped perforation. This officer watched himself carefully for symptoms which he believed must inevitably arise. He knew where the entrance wound was almost directly, but did not localise the position of the exit wound for two hours afterwards. He tried to finish the dressing of the wounded man but became giddy and had to lie down. He then remained perfectly still on his back for 12 hours, suffering much from the constrained position but nothing from his wound, and refused to take some water offered to him by the Boers. Two other men close by, who were also shot through the abdomen, did drink, although strongly advised by him not to do so, and soon began to suffer very much, one vomiting constantly. The captain had only eaten a little porridge for breakfast ten hours before and took nothing by the mouth for 48 hours afterwards. On the 31st he was convalescent and he had had no abdominal symptoms throughout.

SOME complaints reach home from the Cape as to the nature of the medical examination of men embarking for field service. There is little excuse for sending out men with hernias, or such complaints, but it must be remembered that the selection of the reservists is now almost entirely done by civilian practitioners, as so few men of the R.A.M.C. remain at home. Moreover the medical history of reservists is unknown since the day they left the army.

The Chances of Death in War.—It is a well-known fact that in most campaigns disease among the troops in the field is much more deadly in its effect than the bullets of the enemy. The *Boston Medical and Surgical Journal*, 23rd November 1899, quoted in *The Medical Review*, gives a brief, but interesting, paper on this subject. Most competent authorities claim that in actual warfare a ton of shot is expended for every man killed. In the Crimean War the British and French troops fired 45,000,000 projectiles, causing the death of 51,000 Russians, while the enemy killed some 46,000 of the allies with an expenditure of over 50,000,000 projectiles; that is to say, a death for every 1,087 shots fired. The American Civil War returns showed that the loss of both, the Federals and Confederates was about seven per cent. of the forces engaged, the result of an expenditure of nearly 22 hundred-weight of shot per man. At the siege of Mezieres, in the Franco-German

War, the Prussians threw 197,000 projectiles into the town, but less than 400 people were killed by them. At Trouville, two people only were killed after 27,000 odd shells had been discharged. At Sedan the aim of both the Germans and the French showed a marked improvement; the 240,000 projectiles fired killed nearly 9,000 French and Prussians. During the Spanish-American War an enormous amount of shot and shell was fired with but little result. In this war, however, although the mortality was not excessive, the damage to earthworks, fortifications, and Government buildings generally was very great. When the American marines landed at Santiago, after a fusilade upon the enemy lasting two nights, the guns and rifles alone accounted for the consumption of over 25,000 rounds of ammunition; 68 dead Spaniards were found as a result. In Great Britain's recent wars the results have been very little, if any, better than those just recorded. For instance, during the Matabele War, when the warriors of Lobengula were subjected to such a terrible Maxim fire, perhaps the most effective on record, as the impi advanced in solid masses against the British troops, and when it would have puzzled a blind man to have missed hitting something, the mortality was relatively very small considering the vast amount of ammunition expended. This is partly accounted for by the fact that on examination some of the Matabele dead were found to contain as many as fifty bullets each. On another occasion, during an attack on a laager some twenty miles south of Bulawayo, 14,000 rounds of ammunition were fired and only 346 of the enemy were killed. Many military authorities now regard rapidity of fire as of more importance than range and precision, and in giving general orders the instructions are to aim low, which shows that the large number of wounds of the lower limb show that on an average 45 per cent. of wounds occur in the legs, 33 per cent. in the abdomen, 21 per cent. in the arms and chest, and only 1 per cent. in the head. Whatever the relative importance of a rapid fire may be, the urgent demand for skilled marksmen for service in the present campaign tends to show that good shots are none the less desirable.

THERE is one cheering feature about the news we receive from the seat of war concerning the large number of soldiers wounded. That is that a majority of wounded men get well so quickly that they go back to the fighting forces. On an average out of a hundred wounded men brought to hospital, fifteen die in the field hospital, or between the field hospital and the base, or in the ship coming home; twenty-six are permanently disabled by their wounds, and after coming home are discharged from the Army; fifty-nine recover so rapidly that many are sent from hospital to the front in a short time, and the remainder become well enough, sooner or later, to continue their work as soldiers. It is interesting to note that during the Crimean War 11,515 of our men were admitted to hospital, suffering either from wounds or disease. Out of these no fewer than 6,439 were sent back to duty, 3,318 were invalided home, and 1,758 died in the hospitals or the ships.

THE following is a list of nominated surgeons on probation, Royal Army Medical Corps :—

| Names | Qualifications. | Studied at |
|---------------------|--|--|
| A. F. Weston .. | L.S.A. Lond. M.R.C.S., Eng. L.R.C.P., Lond. | St. George's Hosp., Lond. Bristol. |
| P. G. Stock .. | M.B., Ch. B., Edin. | Edinburgh. |
| J. M. Guthbert .. | M.B., Ch. B., Aberd. | Aberdeen. |
| F. MacLennan .. | M.B., B. Ch., R.U.I. | Queen's College, Cork. |
| J. Dorgan .. | M.R.C.S. & L.R.C.P. | Catholic University School of Medicine, Dublin. |
| G. Carroll .. | Irel. | Trinity College, Dublin. |
| G. J. Houghton .. | L.R.C.P. & S., Irel. M.R.C.S., Eng. | St. Mary's Hospital, London. |
| C. H. Furnivall .. | L.R.C.P., Lond. | Newcastle-on-Tyne. |
| H. B. Fawcett .. | M.B., B.S., Durh. | Guy's Hospital, London. |
| R. T. Brown .. | M.B., B.S., Durh., M.R.C.S., Eng., L.R.C.P., Lond. | University Hospital, London. |
| B. S. Bartlett .. | M.R.C.S., L.R.C.P. | Royal College of Surgeons, Dublin. |
| E. Bennett .. | L.R.C.S. & L.R.C.P. | Ditto. |
| F. G. Fitzgerald .. | L.R.C.S. & L.R.C.P., Irel. | Trinity College, Dublin. |
| D. O. Hyde .. | B.A., M.B., B. Ch., B.A.O., Dub. | |

Such is the way the R.A.M.C. is being filled up. One fact is certain that the present rates of pay do not attract the newly qualified man. Within the past couple of years there has been quite a "boom" in the medical profession. The abolition of the "unqualified" practitioner has led to a strong demand for young men as assistants, and even *locum tenens* are asking for and getting better terms than formerly. The rates of pay offered by the War Office simply do not compete with the open market.

THE sum of Rs. 6,700 has been made over by Mrs. Lucy W. Whishan to the Inspector-General, N.W.P. and Oudh, to endow one bed in the King's Hospital, Lucknow, and one bed in the Fyzabad Hospital, in memory of the late Surgeon-Major Whishan, sometime Civil Surgeon of Fyzabad and Lucknow.

WITH the sanction of the Secretary of State the rank of Colonel is conferred on Lieutenant-Colonel C. Little, M.D., I.M.S., while holding the appointment of Inspector-General of Civil Hospitals, Burma.

OF the 21 officers commissioned as Lieutenants, I.M.S., on 27th January 1900, four are posted to the Bengal, nine to the Punjab, five to the Madras and three to the Bombay Commands.

SURGEON-GENERAL C. E. McVITTIE, I.M.S., Honorary Physician to the Queen, P. M. D., Madras Command, is permitted to retire from 1st April 1900.

THE following corrections to Indian Army Regulations are published—

A. R. I., Vol. I, Part I, 853A, now reads as follows:—

853A. Military officers in permanent civil employ are not eligible for rewards for passing in languages under military rules, but this does not apply to military officers who are officiating in civil appointments and have not entered civil or political employment permanently.

A. R. I., Vol. I, Part II, 62B, reads as follows:—

62B. Ward orderlies selected for admission to medical schools will receive regimental pay + good-conduct pay and allowances, and will not be seconded in their regiments while under instruction. On completion of their medical training, they will be struck off the strength of their regiments, and will join the Indian subordinate medical department under the usual conditions of hospital assistants.

Para. 43, A. R. I., Vol. VI, is reconstructed as follows:—

43. They will, when submitting applications to have the academical degrees recognised by the War Office, enter against their respective names in the army list, forward (if it has not already been noted in the *British Medical Register*) their diploma or certificate of registration, or certified copy of the latter, for information.

THE only mention we have seen (up to time of writing) of the incidence of enteric fever among the inoculated is in a letter from the correspondent of the *British Medical Journal* at the base, where he states that at No. 3 General Hospital, in all, except one, of the inoculated cases the temperature dropped steadily and punctually on the 14th day, and did not rise again, thus contrasting with the erratic temperature charts of the uninoculated cases.

THE University of Aberdeen is to confer the honorary degree of LL. D. on Major D. Prain, I.M.S., of the Royal Botanic Gardens, Calcutta.

MAJOR A. G. KAY, M.B., R.A.M.C., has been appointed Surgeon to the new Commander-in-Chief in India.

IN a despatch from Lord Methuen on the action at Magersfontein on December 10th and 11th, sent by Lord Roberts to the Secretary of State for War, occur the following passages:—

"MAJOR O'DONNELL, Royal Army Medical Corps, and Lieutenant Delap, Royal Army Medical Corps, were indefatigable in attending wounded under fire." Black Watch.—Lieutenant Douglas, Royal Army Medical Corps, showed great gallantry and devotion, under a very severe fire, in advancing in the open and attending to Captain Gordon (Gordon Highlanders), who was wounded; also attending to Major Robinson and other wounded men under a fearful fire."

IN replying for the Army at the Irish Medical Graduates' Dinner in London after the toast of "Our Defenders" had been proposed by Dr. J. Holmes Joy, Surgeon-General Jameson, C.B., Director-General, A.M.S., remarked that in the distant past his department was "without form and void." In those remote days boiling tar was applied to wounds, and this was probably the first example of antiseptic surgery. The Crimean campaign was the first occasion on which the duty of the State to the individual soldier was first fully appreciated. In comparing the work of the A.M.S. with the corresponding service in the French Army, he said that in their last eighteen expeditions the French had lost from disease 26½ times more men than ourselves in a corresponding number of campaigns. Comparing the Ashanti and Madagascar expeditions for example, we lost in the former

0·7 per cent. from disease, whilst they in the latter lost 32·5 per cent. of the men engaged. In the Tirah expedition there were 1,100 gunshot wounds, with not a single case of tetanus or pyæmia. The medical arrangements for the present war, he was pleased to say, had excited the warm admiration of the military *attackés* of Germany and Russia.

THE University of Oxford has conferred the degree of M.A., (*honoris causa*) on Surgeon-General A. F. Bradshaw, A.M.S., Q. H. P. (retired).

Gazette Notifications.

GOVERNMENT OF INDIA.

The services of Captain B. R. CHATTERTON, I.M.S., are placed at the disposal of the Government of Bengal for employment in the Jail Department.

Lieutenant-Colonel A. M. CHORTS, I.M.S., Residency Surgeon in Gwalior, is granted 6 months' special leave, Captain C. M. MOORE, I.M.S., officiates in that post.

Lieutenant-Colonel J. T. B. BOKEY, I.M.S., is granted the rank of Colonel, while officiating as P. M. O., Lahore District.

Colonel C. LITTLE, M.D., I.M.S., is appointed Inspector-General of Civil Hospitals, and Sanitary Commissioner, Burma.

Captain C. H. BEDFORD, M.D., I.M.S., is appointed Chemical Examiner, and Professor of Chemistry, Calcutta, vice Major L. A. WADDELL, I.M.S.

The services of Captain F. A. SMITH, I.M.S., are placed at disposal of the Foreign Department.

The services of Captain G. W. JENNY, I.M.S., are replaced at disposal of Military Department.

Lieutenant-Colonel S. H. BROWNE, C.I.E., I.M.S., is granted furlough (*m.c.*) for 18 months. Lieutenant-Colonel F. F. PERRY, I.M.S., is to officiate as Principal of the Medical College, Lahore, in addition to his own duties.

Major H. HENDLEY, I.M.S., to officiate as Professor of Medicine, Lahore Medical College.

Lieutenant-Colonel G. S. A. RANKING, I.M.S., Secretary to the Board of Examiners, is granted furlough for 6 months.

MILITARY DEPARTMENT.

Lieutenant J. M. WOOLEY, I.M.S., has passed in Urdu by higher standard.

Lieutenant T. S. NOVIS, I.M.S., has passed the L. S. in Urdu.

Major L. P. MUMBY, R.A.M.C., is granted 6 months' leave (*m.c.*).

Captain C. H. BENSLEY, I.M.S., 13th B. I., is granted 4 months' extension of leave (*m.c.*).

Colonel J. H. NEWMAN, I.M.S., is permitted to reside out of India.

N.-W. P. AND OUDH.

Captain W. SELBY, I.M.S., was placed on plague duty at Mau-Afima in Allahabad District.

Major G. M. J. GILRS, I.M.S., is placed on special sanitary duty in connection with plague.

Captain J. S. STEVENSON, I.M.S., to be Special Sanitary Officer, Mirzapur.

The services of Major H. W. STEVENSON, I.M.S., are placed at disposal of N.-W. P. for plague duty.

Captain S. F. St. D. GREEN, R.A.M.C., to the civil medical charge of Ranikhet.

BENGAL.

Captain H. M. EARLE, I.M.S., is granted privilege leave for 2 months 11 days.

Captain A. F. STEVENS, I.M.S., is to act as Civil Surgeon of Shahabad. Major C. R. M. GREEN, F.R.C.S., I.M.S., is confirmed as Civil Surgeon, Mozuferpur.

Major F. A. ROGERS, I.M.S., D.S.O., is confirmed as Civil Surgeon of Monghyr.

Major D. M. MOIR, I.M.S., is appointed to act as Civil Surgeon of Chittagong.

Captain F. O'KINEALY, I.M.S., is confirmed as First Surgeon in the Presidency General Hospital, vice Major D. M. Moir, I.M.S. Captain B. C. OLDFHAM, I.M.S., on leave, is appointed Second Surgeon, Presidency General Hospital.

Major H. C. BANERJEE, I.M.S., to be Civil Surgeon of Bakergunge, but to remain at Purnea.

Major F. J. DRURY, I.M.S., is granted furlough for 18 months, and Captain L. ROGERS, I.M.S., F.R.C.S., M.D., to act as Professor of Pathology, Medical College, Calcutta.

Captain B. C. CHATTERTON, I.M.S., to act as Superintendent, Central Jail, Buxar.

Surgeon-Lieutenant ARNOLD CADDY is appointed Medical Officer, Calcutta Light Horse.

Captain B. C. OLDFHAM, I.M.S., is granted 6 months' extension of leave (*m.c.*).

Captain J. C. S. VAUGHAN, I.M.S., is confirmed as Civil Surgeon of Burdwan.

Lieutenant-Colonel D. BASU, I.M.S., is granted three months' privilege leave.

Dr. V. L. WATTS to act as Civil Medical Officer of Jessore.

CENTRAL PROVINCES.

Captain A. G. HENDLEY, I.M.S., to be Civil Surgeon, Nimar.

Lieutenant-Colonel W. A. QUAYLE, I.M.S., to be Civil Surgeon, Nagpur.

Major A. SILCOCK, to be Civil Surgeon, Sangor.

The services of Captain T. H. SYMOSA, I.M.S., are placed temporarily at disposal of Central Provinces.

THERAPEUTIC NOTES.

In the course of an interesting article in the *Practitioner*, March 1900, Dr. Julius Dreschfield, of Manchester, writes as follows:—

Treatment of the various types of Pneumonia.—One has distinguished several clinical types of pneumonia, and in the above sketch some of these have been repeatedly mentioned. It may, however, be not out of place to refer in a summary way to some of them.

Pneumonia in Children.—Apply ice-bag to chest, cold pack or cold bath, if temperature very high; give small doses of quinine; if cough troublesome, 2–3 grains of Dover's powder, or tinct. camphor co. with acetate of ammonia; small doses of sherry or brandy, if pulse weak and quick; Inhalations of oxygen may be given early on, and are often very useful; if there be much dyspnoea and threatening oedema of the lungs, a mild emetic (mustard and water or sulphate of zinc) may be given. In weakly children apply hot poultices rather than the cold applications. As regards diet see above.

Pneumonia in the Aged.—Trust chiefly to a stimulating treatment. Apply warm poultices; alcoholic stimulants, carbonate of ammonia in fairly large doses; turpentine and digitalis to be given cautiously; nux vomica or liq. strichnina preferable.

Pneumonia of Alcoholics.—Requires stimulants; digitalis and strichnina to be given early, as heart failure to be feared. If much hemorrhagic expectoration: tincture of chloride of iron. Do not give too large. for fear of bringing on dilatation of the heart and application of ice to head for delirium.

Apex Pneumonia. is said to be more serious than basal pneumonia, and apt to be followed by phthisis. Such cases should be carefully watched during convalescence. Give tonics and cod-liver oil, and let the patient spend some months in a dry, bracing climate, live out of doors, and have plenty of fresh air.

Creeping Pneumonia.—Commences without rigor, and may run its course without rusty expectoration, and often terminates by slow defervescence rather than by crisis, or each new invasion is ushered in by fresh rigor. Requires a more stimulating treatment, and it is perhaps as well to give quinine during the whole period of the fever.

Epidemic Pneumonia.—Prophylactic measures should not be neglected.

Influenza Pneumonia.—This includes more than one type. During an epidemic of influenza ordinary croupous pneumonia is often prevalent, and generally of a very serious type; a second form of pneumonia occurs due to the influenza bacillus, and a third form of pneumonia occurs due to a streptococcus, and is more or the nature of septic pneumonia. Clinically, these three types are not sufficiently distinguished. A very high temperature from the first has often been noticed in such cases, and death is generally due to the toxic effect of the influenza poison on the heart muscle. Ammoniated tincture of quinine, cold sponging, alcoholic stimulants, inhalation of oxygen, and early administration of strichnina subcutaneously may be mentioned amongst the chief items of treatment.

Typhoid or Asthenic Pneumonia.—Requires quinine in large doses, and free stimulation; if diarrhoea be present, this should be checked.

Antidote for the Poison of Snake and Spider Bites.—Kent (*Richmond Journal of Practice*, November, 1899) states that his method of using this plant, which is known as snake moss, is to take as much as can be packed in a large thimble—that is, about half a drachm in weight—macerate it thoroughly with an ounce of sweet milk, and induce the patient to drink the milk and swallow a portion of the moss, binding the balance to the wound. This snake moss has been identified by Parke, Davis & Co. as a club moss, *Sciaegenella apus* (Lin.) Spring. It is found only in moist, shady places. Its distribution over the United States is unknown to the writer, who reports the case of a woman with a swollen lip, a boy of eleven bitten by a moccasin, and a hound bitten by a moccasin. The effect of the application of this remedy was almost immediate.

It is stated that many other cases could be reported.—(*Therapeutic Gazette*.)

The Truth about the Medical Art.—“What is the honest truth about the medical art? By far the largest number of diseases which physicians are called to treat will get well at any rate, even in spite of reasonably bad treatment. Of the other rate, a certain number will inevitably die, whatever is done; there remains a certain margin of cases where the life of the patient depends on the skill of the physician. Drugs now and then save life; they often shorten disease and remove symptoms; but they are second in importance to food, air, temperature, and other hygienic influences. That was a shrewd trick of Alexander's physician on the occasion of his attack after bathing. He asked three days to prepare his medicine. Time is the great

physician as well as the great consoler. Sensible men in all ages have trusted most to nature.”—Oliver Wendell Holmes.

To Check the Lacteal Secretion.—The *Revue générale de médecine, de pharmacie, et d'hygiène pratiques* for October, 1899, gives the following:—

| | | | | |
|----|--------------------------|----|----|-----------------|
| R | Sulphate of atropine .. | .. | .. | 150 of a grain. |
| | Sulphate of magnesium .. | .. | .. | 1,350 grains. |
| M, | Infusion of gentian .. | .. | .. | 3,600 " |

Eight soupspoonfuls may be taken in the day at two hours' intervals.

For Incontinence of Urine.—According to the *Buffalo Medical Journal* for February, lycopodium has been used with success for this affection in children. Twenty drops of the tincture should be given three times a day, and this dose may be increased to forty or fifty drops. It is, in some cases, more efficient than belladonna.

A Lubricant for Urethral Instrument.—Zucker-kandl, cited by Song at a recent meeting of the Vienna Medical Club (*Wiener medicinische Blätter*, November 2, 1899), recommends this mixture:

| | | | | |
|---|--|----|----|-----------|
| R | Glycerin .. | .. | .. | 20 parts. |
| | Gum tragacanth .. | .. | .. | 5 " |
| | Solution of carbolic acid (three per cent.) .. | .. | .. | 180 " |

CORRIGENDUM.

IN DR. KASCHKADAMOFF'S article on Plague in Russia in our issue for April, page 121, col. 1, instead of the words “Professor Lewin, the author of the present article” read “Professor Lewin, the author of the article from which the present extracts have been taken.”

Notice.

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BOOKS, REPORTS, &c., RECEIVED.

Abbott's Hygiene of Transmissible Diseases. W. B. Saunders, 1899. Diseases of the Nose and Throat. By Braden Kyle. W. B. Saunders, 1900.

A Manual of Gynaecological Practice, 2nd English Edition. Translated from the German of Dr. A. Duhrssen, London. H. K. Lewis, 1900.

A Manual of Pathology. By Joseph Coats, 4th Edition. Edited by L. R. Sutherland, Longmans Green & Co., London, 1900. Price 31s. 6d.

Anesthetics. By D. Buxton (Lewis' Practical Series). 3rd Edition, 1900. Cr. Svo. Price 6s.

Nordrach at Home. By J. J. S. Lucas. Bristol: J. W. Arro Smith, 1900. Price 1s.

Imperative Surgery by Lilienthal, New York, 1900. Macmillan & Co.

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Elementary Physiology by T. H. Huxley, New Ed. 1900. Macmillan & Co.

The Permanganate Treatment of Opium-poisoning by Dr. W. O. Moor, 1899.

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Original Articles.

CHLOROFORM.

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INTRODUCTORY.

UP to the year 1889 the opinions on chloroform held by the medical profession in Great Britain were influenced by two factors, one clinical and the other experimental, both curiously alike. In the operating theatre deaths had taken place under chloroform, generally during trivial operations, though Syme and his followers, who entirely disregarded the pulse when chloroform was given, had few accidents and hardly any fatalities. Some of the deaths occurred so rapidly that they appeared to be sudden, and inexplicable on any other ground but that of direct failure of the heart. The experimental results obtained by various observers were no less contradictory. Wakley and others had found that when animals were poisoned by chloroform, the respiration stopped and then the heart; but the Committee of 1864 of the Royal Medico-Chirurgical Society, who first employed scientific instruments in the investigation, arrived at the conclusion that chloroform is dangerous to the heart, and paralyses it because they discovered that it lowers the blood pressure. In 1879 the Committee of the British Medical Association concluded that paralysis of the heart is produced by chloroform, and that it may sometimes be sudden and capricious, because they discovered that the fall of the blood pressure under chloroform is sometimes sudden and apparently capricious.

In the year 1889 the Hyderabad Commission proved that the fall of the blood pressure which is produced by chloroform is not in itself dangerous, and cannot therefore be due to direct paralysis of the heart. The Commission also proved that the sudden falls of pressure which occasionally occur under chloroform are caused, not by any direct effect upon the heart, but by the deprivation of air or asphyxia, from choking, struggling, or holding the breath. The experiments of the Hyderabad Commission were confirmed by the late professor Rutherford in Edinburgh in 1890. In 1892 the Nizam of Hyderabad subsidized experimental enquiries in Philadelphia by Professors Hare and Thornton, and in Cambridge by Drs. Gaskell and Shore. The American experiments confirmed those of Wakley, while Messrs. Gaskell and Shore devised the cross-circulation experiments, by means of which it was ultimately proved that chloroform has no direct action on the heart.

I.—The Physiological Action of Chloroform.

The action of chloroform is to lower the blood pressure, with first unconsciousness, then anaesthesia, then stoppage of the respiration, and then stoppage of the heart. When given continuously by any means which ensures its free dilution with air, chloroform causes a gradual fall in the mean blood pressure, provided the respiration is not impeded or irregular in any way, and continues without struggling or holding the breath. As this fall of the blood pressure proceeds the patient becomes insensible, then the breathing gradually ceases, and lastly the heart stops beating. This action is shown in Diagram No. I. Other things being equal, the more concentrated the chloroform the more rapid the fall, and conversely the greater the degree of dilution the less rapid the fall, until a degree of dilution is reached which no longer lowers the blood pressure or produces anaesthesia.

The most important point connected with the physiology of the fall of the blood pressure under chloroform is its cause. The Hyderabad Commission was unable to prove more than that a fall of the blood pressure is not in itself dangerous; consequently the fall which is invariably produced by chloroform when effectively given by inhalation cannot be due to failure of the heart. The precise cause was subsequently determined by Professor Gaskell's and Dr. Shore's cross-circulation experiments, by means of which when a cross-circulation is established between two animals the chloroform can be sent at will either (a) to the heart alone, or (b) to the brain alone. When chloroform is sent to the heart alone it produces no effect: it has no direct action on the heart. When it is sent to the brain alone its usual action is exhibited, viz., lowering of the blood pressure, with, first insensibility, then anaesthesia, then stoppage of the respiration, and then stoppage of the heart. The effect of chloroform when sent to the brain alone, and to the heart alone, is shown in Diagrams II and III. The action of chloroform is therefore entirely confined to the nerve centres in the brain, and it is clear that it lowers the blood pressure by causing narcosis, first of the vaso-motor and then of the respiratory centre; the fall being due in the first place to dilatation of the smaller arteries, which is harmless, and then, when it is pushed beyond this stage and overdosing takes place, to indirect weakening and failure of the heart, which is lethal.

The vaso-motor portion of the fall of the blood pressure under chloroform being entirely free from danger, it is not surprising that if the administration of the anaesthetic is stopped at an early stage, the blood pressure very soon begins to rise again to its usual level. But the second part of the fall, that in which weakening

of the heart becomes a factor through narcosis of the respiratory centre, is dangerous, and if chloroform is pushed as far as this stage, there comes a time—not easy to define because of the impossibility in practice of drawing a distinct line between the termination of the vaso-motor and the commencement of the cardiac falls—when the blood pressure and respiration will no longer be restored spontaneously, although the heart may continue to beat after the breathing has stopped.

If the inhalation of chloroform is interrupted at any stage, the fall of the blood pressure still continues at a rate which altogether depends on the regularity and rapidity of the fall while the chloroform was being inhaled. This vital and all-important after-effect is called the after-fall of the blood pressure, and is probably due to absorption of a portion of the residue of the chloroform in the system after the stoppage of the inhalation. In this way it often happens, if chloroform is given too freely, that though the respiration may be going on when the chloroform is discontinued, it afterwards stops. It follows from what has been stated above that an after-fall of the blood pressure is of little consequence during the early or vaso-motor stage of chloroform administration, but that it is excessively dangerous during the later stage when the heart has been weakened by narcosis of the respiratory centre or by asphyxia.

Two conditions disturb the gradual fall of the blood pressure under chloroform, *viz.*, struggling and irregularity of the breathing, especially if the latter takes the form of holding the breath and asphyxia. The effect of struggling alone is to make the blood pressure irregular, and is probably mechanical. It is well shown in Diagram IV. The effect of holding the breath with more or less asphyxiation is much more remarkable, the blood pressure often falling suddenly to zero, while the heart's action is markedly slowed. As soon as the breath is taken again the blood pressure rises as suddenly as it fell, and the gasping or deep respiration which succeeds causes a large intake of chloroform which may in any stage amount to overdosing and produce an after-fall of pressure which is highly dangerous. The sudden falls of the blood pressure which are produced when the breath is held are due to vagus inhibition, and stoppage of the heart from stimulation of that nerve. They are not in themselves dangerous, but they lead to overdosing in the same way holding the breath does.

The combination of struggling and holding the breath under chloroform, which is shown in Diagram No. VI, causes violent fluctuations of the blood pressure, and then a speedy fall, which very soon leads to dangerous depression from cardiac weakening. The after-effect which

is produced is most dangerous, and whether it occurs in an early or a late stage of the inhalation it may terminate in rapidly fatal overdosing. Asphyxia, like anything else which leads to or is accompanied by deep or exaggerated inspirations, is apt to increase the intake of chloroform beyond normal limits and bring about a rapid decline of the blood pressure. Even slight asphyxia gives rise to violent oscillations of the blood pressure curve under chloroform, but if the asphyxia is more decided it produces an effect similar to that caused by holding the breath, or by stimulation of the vagus, and leads to overdosing in the same manner. In addition to this it is well known that any form of asphyxia under chloroform must weaken the heart, and immensely increase the danger which results from overdosing.

When the breathing stops from an overdose of chloroform, it may or may not begin again spontaneously. It all depends on the character of the after-fall, and how it was brought about. The effect of artificial respiration in restoring natural breathing and blood pressure is usually well marked, but it is never certain that it will be successful, no matter how soon it is commenced after the breathing stops. As in the case of the spontaneous restoration, a great deal depends upon the amount and character of the after-fall. Artificial respiration not merely pumps the overdose of chloroform out of the blood, but it exerts considerable influence in exciting the natural breathing. Hence if the overdose has been slight and the after-fall moderate, artificial respiration will nearly always be successful in restoring the respiration if it stops. But if the overdose has been excessive, and there has been struggling and holding the breath or asphyxia, the after-fall may be fatal in spite of artificial respiration.

Drugs do not alter the action of chloroform unless they are given in such doses that their own special effects become predominant. Medicinal doses of morphine, given immediately before or during the administration of chloroform, do not increase the anaesthetic action of the drug, but they produce sleep or rest after the chloroform anaesthesia has passed off.

Chloroform has no power to increase the tendency to shock in surgical operations. Shock and chloroform are incompatibles.

II.—*The Application of the Physiology of Chloroform to Practice.*

1. *The action of chloroform is to lower the blood pressure with, first unconsciousness, and then anaesthesia.*

The duty of the chloroformist is to produce unconsciousness or anaesthesia, without lowering the blood pressure at any time during the inhalation beyond the point where anaesthesia

is complete. The Diagram No. I shows clearly that if the chloroformist keeps to and does not exceed this duty throughout an administration, the region of danger is approached but is never entered.

2. When given continuously by any means which ensures its free dilution with air, chloroform causes a gradual fall of the mean blood pressure.

The dilution with air must be sufficiently free to allow the patient, as long as he is conscious, to inhale the chloroform comfortably and without any sense of suffocation, such as would cause him to struggle or hold his breath; and at the same time the vapour must be sufficiently strong to lower the blood pressure and produce unconsciousness or anaesthesia. These ends are attained by the use of the Hyderabad cap, and if the patient is particularly sensitive to the pungency of the vapour of chloroform, and cannot breathe comfortably at first, the difficulty can always be overcome by making him blow gently into the cap after every inspiration.

3. When chloroform is sent to the heart alone it produces no effect whatsoever: it has no direct action on the heart.

As chloroform has no direct action upon the heart it is obviously useless to take the pulse as a guide to its effect. Now that the physiological effects of chloroform are so well known, and it is becoming recognised that they are the same in the laboratory as they are in the operating theatre, it is almost superfluous to insist that accidents with chloroform must be inevitable unless the pulse is disregarded as a factor in the inhalation. The pulse can only show signs that danger has actually arisen under chloroform, either from overdosing or from interference with the breathing, both of which it is the duty of the chloroformist to prevent. The principles whereby accidents with chloroform can be guarded against with certainty, and overdosing or interference with the breathing prevented, will be fully explained in another section.

4. If the administration of chloroform is stopped at an early stage the blood pressure very soon begins to rise to its normal level.

The practical utility of this particular item of the physiology of chloroform is that when the anaesthetic is not pushed beyond the vaso-motor stage of the fall of the blood pressure, it recovers its normal level almost immediately after the inhalation is stopped. Many operations in surgery can be performed while the patient is insensible in this stage, which is far removed from the region of danger, but the recovery is so rapid that only those of short duration can be carried out during the brief period that unconsciousness lasts.

5. If the inhalation of chloroform is interrupted at any stage, the blood pressure still continues to fall at a rate which depends on the regularity and rapidity of the fall while the chloroform was being inhaled.

The after-fall of the blood pressure under chloroform, which occurs when the inhalation is interrupted, is practically the most important of all the physiological facts discovered by the Hyderabad Commission. Clinically it is a contingency which must never for an instant be lost sight of, and, though in the vaso-motor stage of the fall of the blood pressure the after-fall is inappreciable if the breathing is not irregular, the only way to avoid accidents with chloroform is never to disregard the possibility of its occurrence in any stage of the administration.

6. Two conditions disturb the gradual fall of the blood pressure under chloroform, and lead to overdosing and a dangerous after-fall of the blood pressure:—struggling, and irregularity of the breathing, especially holding the breath. The combination of struggling and holding the breath causes the most violent fluctuations of the blood pressure.

Struggling disturbs the gradual fall of the blood pressure, and irregularity of the breathing causes irregularity of the intake of chloroform. But struggling and irregular breathing combined, especially holding the breath, lead to overdosing with chloroform and a rapid after-fall of the blood pressure. They must therefore be treated as signs of the approach of danger, which it rests with the chloroformist to avert. Accordingly the moment struggling or irregular breathing, with holding the breath, occurs the chloroform must be stopped, and nothing but air given until all danger of an after-effect has passed off. No doubt holding the breath and reflex stoppage of the heart are in themselves safeguards against overdosing, the former by preventing the chloroform from entering the lungs, and the latter by delaying its conveyance to the nerve centres. But they cannot last long, and even while they do the patient is asphyxiating himself. Deep inspiration and rapid pulse follow, and if the chloroform is still over the face, there may be an overdose with an after-fall of the blood pressure which may be entirely beyond the control of the chloroformist. In practice, therefore, the rule should never be broken, to regard struggling and irregular respiration as signs of danger which demand the immediate removal of the chloroform inhaler, because it is unsafe to give the anaesthetic while they persist. Experience has shown that while giving air alone under the conditions above described—even for thirty or forty seconds or more at a time—does not delay the production of anaesthesia, it makes it free from risk.

7. Morphine produces sleep and rest after the anaesthesia of chloroform has passed off.

If the patient is allowed to return to consciousness immediately after severe or painful operations under chloroform, he usually suffers pain for two or three hours. The exhibition of morphine hypodermically, in adults, after the first drachm of chloroform has been inhaled, should be the rule in practice. The patient afterwards passes from the chloroform anaesthesia into the semi-narcosis of morphine, which lasts until the painful effects of the operation have passed away.

8. Chloroform and shock are incompatibles.

The practical application of this physiological truth lies in the fact that operations can be performed with safety, and without any fear of shock, in any stage of chloroform administration.

PART III.

How to give Chloroform—Syme's Principles.

To give chloroform with uniform safety it is essential to follow the principles of Syme. In accordance with these principles the points which are of the greatest importance are, first, a free admixture of air with the vapour of chloroform. Secondly, if this is attended to in such a way that the patient can breathe without any distress or choking, the more rapidly the chloroform is given the better till anaesthesia is produced. Then—and this is the all-important point—the chloroformist must be guided as to the effect, not by the pulse or by the circulation, but entirely by the respiration; no one should ever have his finger on the pulse while chloroform is given. If the chloroformist thinks it necessary at any time to examine the pulse in order to find out how the patient is bearing the inhalation or the operation, the administration should invariably be stopped while the examination of the pulse is being made. No special apparatus is required. The dose can be regulated only by regular normal breathing, which it is the duty of the chloroformist to maintain throughout the administration, whether an apparatus is used or not. Lastly the anaesthesia should never be pushed beyond the point when the patient is fully under the influence of the anaesthetic.

General Principles.

There is no uniform rule regarding the kind of inhaler to be employed for the administration of chloroform. In Syme's day a folded towel and an unmeasured dose were the fashion, but this plan was clumsy, and expensive on account of wastage. Various kinds of apparatus have been devised, most of them having for their object accuracy of dosage. But it has been pointed out by Lieutenant Clayton Lane, M.D., I.M.S., that we do not want to know the amount of chloroform

which is circulating in the blood. The amount which would overdose a case of empyema would probably not be sufficient to anaesthetise an ordinary case of dislocation of the shoulder. What we want to know in giving chloroform is the precise effect the drug is having on the tissues, i.e., the nerve centres, and no form of apparatus can relieve the chloroformist of the responsibility of always having the effect of the chloroform entirely under his own personal control. The object of a chloroform inhaler should be the free admixture of air with the chloroform, so that the vapour is never so pungent as to interfere with the patient's breathing. As good a form of inhaler as any other is the cloth cone or cap, with a little absorbent cotton stitched into the apex, which is used in Hyderabad. A drachm of chloroform is poured on to the cotton in the cap every three quarters of a minute or minute, and the cap should be held loosely but closely over the mouth and nose.

The test of unconsciousness under chloroform is the inability of the patient to reply to questions when spoken to. The tests of anaesthesia are (1) snoring, (2) quiescence and relaxation of the muscles, and (3) abolition of the corneal reflex. Abolition of the corneal reflex is the infallible sign of anaesthesia, but operations can be commenced directly the patient is quiescent, since nothing more is demanded by the surgeon. Snoring is generally the first and most valuable sign of the near approach of anaesthesia. It is usually followed in a few seconds by quiescence, and a little later by abolition of the corneal reflex.

Two or three assistants should always be present when chloroform is given, because in a certain percentage of cases it produces excitement and intoxication, and the patient may struggle so violently as to become unmanageable if assistance is not at hand. No special preparation of the patient is necessary, the chloroform must be adapted to the patient not the patient to the chloroform. It is advisable not to permit any solid food to be taken for three or four hours before an operation under chloroform, since the drug is apt to induce vomiting. But if food has been recently taken, the tendency of chloroform to cause vomiting and indigestion should not debar the surgeon from giving it, and it is better that the food should be vomited than retained in the stomach undigested. If the patient is very weak and nervous, some diffusible or alcoholic stimulant may be given before the administration is commenced, but as a general rule it is wise to do without it; and it is unwise to encourage in any way the idea that the heart requires strengthening or stimulating to enable it to bear the inhalation of chloroform. Everything about the patient's neck, chest, and waist must be loose, and the lower part of the chest

ought, if possible, to be exposed, in order that the chloroformist may see the movements of respiration, as well as hear it, all the time the administration is going on.

The Administration.

The administration of chloroform should be begun by the application of the cap containing a drachm of chloroform gently over the mouth and nose. A great deal depends on the management of this stage of the inhalation. The patient has probably been nervous and excited up to the last minute beforehand, and to make him settle down to inhaling a pungent vapour, which may give him a feeling of suffocation, demands considerable skill on the part of the administrator. If the administration is commenced in such a manner that the patient is able to breathe regularly at first, without any feeling of suffocation and impending death, the whole process will generally be normal and quiet, whereas if the cap is applied over the face in such a way as to make him resist, and choke, or hold his breath, the inhalation will most likely be abnormal and irregular throughout. In placing the cap over the face it is well to cover the mouth in first and then the nose, and it should afterwards be held with the apex pointing as nearly as possible directly upwards, so that the heavy vapour of the chloroform falls almost straight down on to the nose and mouth. The cap should be fairly closely applied, more or less air being let in from below, but—with the exception of young children—never so tightly as to give the patient or the by-standers the idea that it is being jammed down on to the face.

It is the duty of the chloroformist to ensure normal and regular breathing and not to allow it to be interfered with in any way while chloroform is given. Adults will generally breathe quietly and regularly into the cap, if they are enjoined to do so, as long as they are conscious. If from any cause they cannot breathe quietly, or if they feel choked, they must be told to blow into the cap after each inspiration. This makes them breathe regularly, and takes away the feeling of choking or suffocation. The only drawback to this plan of ensuring regular breathing is, that as unconsciousness comes on, the patient sometimes blows so rapidly and vigorously that apnoea supervenes. Young children require special management to make them breathe regularly. The way to make a young child breathe regularly is to make it cry, by holding the chloroform cap close down over its mouth and nose until it becomes unconscious and quiet, when the administration can be proceeded with in the ordinary way. This plan of jamming the cap down over the mouth and nose in young children has no other effect but to ensure regular breathing, by making them

cry until they are unconscious. It does not make them hold their breath and breathe irregularly, as it does adults, and it affords a practical illustration of the physiological fact that in the vaso-motor stage of the fall of the blood pressure, the inhalation of the concentrated vapour of chloroform, even in a very young child, has neither any bad effect, nor has it any after-effect, so long as the breathing is regular.

At the end of each minute, or forty-five seconds, a drachm of chloroform is added to the cap. To do this the cap should be removed from the face, and before the fresh chloroform is poured into it, the chloroformist should satisfy himself that the patient's breathing is unimpeded, and, by testing the sensibility of the cornea, that no after-effect is being produced. The fresh drachm should then be poured in, the sensibility of the cornea again be tested, and the cap should only be re-applied when the chloroformist is satisfied that there is no after-effect. There is no hurry about this, it takes from six to eight or ten seconds, or more, during which the patient is breathing nothing but pure air. Every time fresh chloroform is added, the re-application of the cap to the patient's face by the chloroformist virtually constitutes a certificate that no after-effect is being produced. In the early stages of the administration this is not of much importance, but it becomes more and more important as the inhalation proceeds and anaesthesia sets in, and it is one of the two great safeguards against overdosing.

Unconsciousness generally supervenes after the inhalation of the second or third drachm of chloroform, and in this stage many of the minor operations of surgery, which are of short duration, can be performed before consciousness returns. Such operations as the insertion of an aspirating needle into a cavity, the incision of whitlows and abscesses, the breaking down of adhesions in a stiff joint, and many others which only require a few seconds for their actual performance, can be carried out while the patient is insensible, and though there may be reflex struggling or shouting, he will not remember anything about it afterwards, nor as a rule will there be any vomiting. The two drawbacks to operating in this stage of partial anaesthesia are the occasional struggling which the operation gives rise to, and its short duration. But if the patient becomes boisterous, or the operation has to be prolonged, the chloroform can be continued with the usual precautions until anaesthesia is complete.

Struggling or irregular breathing and holding the breath during the administration of chloroform are signs of danger ahead, which it rests entirely with the chloroformist to avert. The danger is that if the chloroform cap is held over the face while the patient is struggling, breathing irregularly, and holding his breath, an

overdose may be taken in and an after-effect produced which may be altogether beyond the chloroformist's control. The instant therefore that irregular breathing, struggling, and holding the breath occur under chloroform, it is the duty of the chloroformist to remove the inhaler forthwith, and not to give the patient any more chloroform until the respiration is regular again, and there is no possibility of an after-effect. Struggling, with irregular breathing and holding the breath under chloroform must be regarded by the chloroformist as danger signals. As long as the danger signal is up it is unsafe to give chloroform, and the patient must breathe nothing but pure air ; and the signal must not be considered "off" and the inhalation of chloroform proceeded with, until the chloroformist is satisfied that the breathing is regular, and that no after-effect whatsoever is being produced. This is the second of the two great and allied safeguards against accidents with chloroform ; and it is safe to say that if they are not neglected accidental overdosing need never occur.

As anaesthesia approaches, the patient's breathing becomes snoring and regular, and the voluntary muscles become completely relaxed. Very shortly afterwards the sensibility of the cornea to touch disappears, the reflex is abolished and unconscious winking no longer occurs. The patient is "over." The cap should now be removed, and all that is necessary is to give a little more chloroform from time to time, so as to maintain the anaesthesia at the same level until the operation is finished. The vigilance of the chloroformist must never be relaxed in any way, and the same precautions against overdosing must be persevered with, as long as the operation lasts and the anaesthesia is being maintained, as were found necessary while it was being induced.

If accidental overdosing with chloroform takes place, and the breathing becomes seriously embarrassed or stops, the lower jaw should be pushed or pulled forwards by the chloroformist and the tongue drawn out with catch forceps. This will generally restore natural breathing. If it does not, artificial respiration should be performed, a few drops of nitrite of amyl being poured on to a handkerchief or cloth and held in front of the patient's nose and mouth while it is continued. The easiest and most effectual way of performing artificial respiration—so as to admit of the other measures being carried on without interruption at the same time—is for the surgeon himself to get on to the operating table, and kneeling astraddle the patient, alternately compress and relax the chest and diaphragm. It is a useful plan, for any one who has to teach students how to give chloroform, to hold frequent demonstrations of overdosing in the dog, and exercise them in the needful measures of restoration until they

know how to act in similar cases of emergency in man.

Chloroform is frequently employed in midwifery. For midwifery operations it should be administered in the usual way. When used merely to assuage the pains of labour it should be given in a ten-minim dose in the ordinary cap with each pain, and none should be inhaled in the intervals between the pains. In normal labours chloroform should as a rule only be given in the later part of the second stage : seldom earlier. Begun at this stage the ten drop dose at first produces very little effect. As the pains increase in frequency and duration the effect becomes more and more marked, until just at the most painful time, during the expulsion of the head, it will generally be found that the patient is unconscious, and beyond this point the anaesthetic need not be pushed. In dentistry the extraction of teeth can be performed either under partial or complete anaesthesia with chloroform. In either case when the extraction is about to be begun the chloroformist, having made quite sure that no after-effect is being produced, should push forward the lower jaw, and keep it in this position until the operation is finished. This very much facilitates the opening of the patient's mouth, and the use of a gag, and it likewise prevents obstruction of the breathing during the extraction.

IV.—Clinical Observations and Notes. Observations.

Notes ought to be taken of all the events, as they take place, that happen during every administration of chloroform, not only on account of their statistical value, but also in order that should any accident occur it may be traced to its proper cause. Moreover by taking careful notes the attention of everybody who is present is concentrated on the administration, and, however trivial the operation may be, there is no possibility of the inhalation of the chloroform being treated as trivial matter. It is almost needless to insist that the attention of the chloroformist must never be distracted in any way from the inhalation and its anaesthetic effects throughout the entire administration, and his responsibility does not cease until the operation is over, and the patient shows unmistakable signs of returning consciousness. This rule about the chloroformist is so imperative that it admits of no relaxation, and while chloroform is being given there should be no feeling of the pulse, no wiping of the patient's mouth, and no shifting of his position on the operating table, or of the position of the table itself. If any manipulations of this kind are considered necessary the chloroform must be stopped while they are being carried out.

Counting is sometimes depended upon to make the patient breathe regularly during the

administration of chloroform. The tendency of counting, however, is frequently to produce a result which is the opposite of what is intended, as the patient may count from 1 to 20 or 25 without taking a breath, the effect being precisely similar to that of holding the breath, which so often leads to the gasping in of an overdose. Another dangerous practice which has its advocates in some quarters is to keep the patient's lower jaw pulled or pushed well forward for the purpose of warding off stertorous breathing during chloroform inhalation. Paradoxical as it may seem it is nevertheless true that the more successful this measure is in preventing stertor, the more it conduces to overdosing. Stertorous breathing is a sign of incipient overdosing, in the shape of narcosis of the respiratory centre, and it would be no less unwise to push chloroform with the jaw in such a position that stertor cannot occur, than it would be to push it with the patient's eyes bandaged so that the sensibility of the cornea cannot be tested.

In any case where the condition of the respiratory organs causes weakening of the heart, chloroform should only be given very sparingly or not at all. The surgeon is often compelled to operate instantly for the relief of conditions in which the heart is so weakened that the mere substitution of one or two per cent. of chloroform for the same amount of air in the air inhaled would stop its action. For instance in tracheotomy, when the heart has been weakened by the most deadly suffocation for some hours beforehand, it is quite unjustifiable to give chloroform, except a mere whiff to distract the patient's attention during the first incision. One drop or so in the cap is all that is admissible. There are other cases again, such for example as empyema, where the breathing is already seriously embarrassed or hampered, in which chloroform ought never to be pushed further than the stage of unconsciousness. In short in all cases where there is disorder or weakening of the heart from respiratory affections, chloroform can only add to it by still further interfering with the function of respiration, and in these cases not only is this dangerous, but the slightest narcosis of the respiratory centre, such as is indicated by stertor, may constitute fatal overdosing. Consequently if patients with respiratory diseases must be operated upon, the operation should be performed either without chloroform, or in the first stage of unconsciousness, before any narcosis of the respiratory centre is possible, and beyond this stage it should not be pushed. There are many other conditions in which similar precautions against overdosing must be observed, and in the weakening of the heart which is brought about by chronic alcoholism, and by certain forms of kidney disease, it is of the last importance, if chloroform is

employed at all, to make absolutely certain that no after-effect whatever is being produced at any time while the anaesthetic is being given.

Notes of Cases.

A few cases are given here from the Afzul-gunj Hospital note-book to illustrate the principles which have been laid down in the previous portion of this work. Cases I and II are good examples of the method of ensuring regular breathing, with complete absence of suffocation, in children, by holding the chloroform close to the mouth and nose and making them cry; and the first also shows how rapidly and safely a minor operation may be performed in a child under this method of partial anaesthesia with chloroform. Case III shows how partial anaesthesia, combined with morphine, can be employed in operations for empyema. Case IV is one in which there was no struggling, but it illustrates the way in which an examination is made in a leisurely manner without hurry, for after-effects, every time chloroform is added to the cap. It also demonstrates that this plan of ensuring safety does not retard the production of anaesthesia. Cases IV and V show the way morphine is employed in adults. Case V is one in which the usual struggling occurred, and it illustrates how chloroform is to be entirely withheld on account of the danger there is in giving it while struggling and irregular breathing continue.

Case I.—January the 30th, 1900.—Partial anaesthesia in a child.

Name, Bismillah Bee, *ætat.* four years, female. Took food last at 8-15 A. M. to-day. Operation, passing lachrymal probe. Chloroformist's name A. V. Raja Gopal, 4th year student.

Administration commenced at—
H. M. S.

- 9. 17. 45. Chloroform. Cap held close down over the mouth and nose.
Screaming and crying, regular breathing.
- 9. 18. 10. Quiet, natural breathing.
- 9. 18. 20. Lachrymal probe passed.
- 9. 18. 23. Cap removed.
- 9. 18. 35. Patient carried away..

One drachm of chloroform was employed, the operation lasted fifty seconds, and there was no vomiting.

Case II.—February the 4th, 1900.

Name, Chintoni, *ætat.* seven years, male. Food last taken at 8 A.M. to-day. Pulse, 100. Respirations 30: immediately before the inhalation was commenced. Operation, lateral lithotomy. Chloroformist's name, Narain Gobind, 4th year student.

Administration commenced in 1 drachm doses at—

H. M. S.

- S. 56. 35. Chloroform. Cap held closed down over the mouth and nose. Crying and screaming, regular breathing.
- S. 57. 25. Quiet.
- S. 57. 35. Cap removed. Chloroform added. Respiration regular.
- S. 57. 45. No after-effect, cap re-applied.
- S. 57. 55. Shouted, then snoring began.
- S. 58. 35. Cornea insensitive, over. Chloroform stopped.
- 9. 3. 20. Operation finished.
- 9. 4. 0. Consciousness returning.
- 9. 4. 35. Patient carried away.

Two drachms of chloroform were employed to produce full anaesthesia, the time being two minutes. The chloroform was added to the cap at the rate of one minim per second; two drachms in all were used; the duration of the operation was eight minutes, and there was no vomiting.

Case III.—January the 29th, 1900.—Partial anaesthesia in an adult.

Name, Meran Sab, *ætat.* thirty-five years, male. Had food last at 7.45 A.M. to-day. Operation, aspiration of empyema. Chloroformist's name, A. V. Raja Gopal, 4th year student.

Administration commenced at—

H. M. S.

- 9. 41. 5. Chloroform. Breathing quiet and natural.
- 9. 42. 5. Morphine gr. $\frac{1}{4}$ hypodermically.
- 9. 42. 15. Aspiration commenced. Cap removed.
- 9. 45. 55. Aspiration finished (ten ounces of pus withdrawn).
- 9. 46. 10. Patient walked away.

One drachm of chloroform was used, and gr. $\frac{1}{4}$ of morphine. The patient was unconscious when the aspirating needle was inserted into the pleural cavity, and lay quite afterwards while the pus was being drawn off and the needle withdrawn.

Case IV.—16th January, 1900.

Name, Sheik Mohidin, *ætat.* 56 years, male. Food taken last at 8 P.M. yesterday. Pulse 112, and respirations 32 immediately before the administration was commenced. Operation, dilatation of stricture of the urethra. Chloroformist, Raja Gopal, 4th year student.

Administration commenced at—

H. M. S.

- S. 33. 35. Chloroform. Respiration, blowing rapidly into the cap.
- S. 34. 30. Cap removed. Apnoea, lasted for thirty-five seconds.
- S. 35. 5. Quiet breathing recommenced, no after-effect, cap re-applied.

H. M. S.

- 8. 35. 30. Morphine, grain $\frac{1}{4}$ hypodermically.
- 8. 35. 35. Cap removed. Chloroform added.
- 8. 35. 42. No after-effect, cap re-applied.
- 8. 36. 40. Cap removed. Chloroform added.
- 8. 36. 55. No after-effect. Cap re-applied.
- 8. 37. 40. Cap removed. Chloroform added.
- 8. 38. 5. No after-effect. Cap re-applied.
- 8. 39. 2. Cornea insensitive. Over. Chloroform stopped.
- 8. 41. 17. Chloroform.
- 8. 45. 0. Chloroform.
- 8. 49. 55. Consciousness returning.
- 8. 52. 10. Patient carried away.

The production of anaesthesia occupied five minutes and twenty-seven seconds, but for one minute and twenty-two seconds of this the patient was breathing nothing but air, so that he only inhaled chloroform for four minutes and five seconds while anaesthesia was being produced. Five drachms of chloroform were employed to produce anaesthesia, and seven drachms for the whole operation. The operation lasted eighteen minutes and thirty-five seconds, and there was no vomiting.

Case V.—4th December, 1899.

Name, Chundriah, *ætat.* thirty-one years, male. Had food last at 8 P.M. yesterday. Pulse 100, and respirations 28 immediately before the inhalation. Operation, incision for liver abscess. Chloroformist, Yusuf Baig, 4th year student.

Administration commenced at—

H. M. S.

- 9. 15. 45. Chloroform. Respiration, natural and quiet.
- 9. 16. 15. Cap removed, table turned round.
- 9. 16. 23. Cap re-applied.
- 9. 16. 55. Cap removed. Chloroform added.
- 9. 17. 5. Morphine, gr. $\frac{1}{4}$ hypodermically.
- 9. 17. 10. Cap re-applied, no after-effect.
- 9. 17. 30. Struggling, cap removed, breathing irregular.
- 9. 17. 50. Regular breathing, no after-effect, cap re-applied.
- 9. 18. 0. Cap removed. Chloroform added.
- 9. 18. 25. Cap re-applied, no after-effect.
- 9. 18. 30. Snoring.
- 9. 19. 20. Cap removed. Chloroform added.
- 9. 19. 50. Cap re-applied. No after-effect. Quiet.
- 9. 20. 15. Cornea insensitive; over. Chloroform stopped.
- 9. 26. 30. Consciousness returning.
- 9. 28. 50. Patient carried away.

Four drachms of chloroform were employed to produce anaesthesia in four minutes and thirty seconds, but during this time the chloroform cap was removed from the face, and the patient breathed nothing but air, for one minute and thirty-eight seconds. He actually inhaled the anaesthetic for two minutes and fifty-two seconds

Vaso-Mo Fall.
Safet

Mixed Fall.
Danger

Cardiac Fall.
Death.

only. Five drachms of chloroform were used, the operation lasted for thirteen minutes and five seconds, and there was no vomiting.

Case VI.—February 15th, 1900.

Name, Yelliah, *cetat.* forty-three years, male. Took food last at 9 o'clock P. M. yesterday. Operation, forcible extension of stiff (dislocated seven months) elbow joint. Pulse 88, respirations 24, immediately before the chloroform was given. The administration was commenced in one drachm doses at:—

H. M. S.

| | |
|---|--|
| Period 1. Chloroform, one minute. | 9. 21. 30. Chloroform. Blowing and talking. |
| Period 2. Air alone, Six seconds. | 9. 22. 30. Cap removed. Morphiné, gr. $\frac{1}{4}$ hypodermically. Chloroform added to the cap. |
| Period 3. Chloroform, eight seconds. | 9. 22. 36. No after-effect. Cap re-applied. |
| Period 4. Air alone, forty-two seconds. | 9. 22. 44. Struggling, and holding breath. Cap removed. Got rapidly purple in the face. When the breathing began again there were about three or four respiratory movements to each breath. |
| Period 5. Chloroform, nineteen seconds. | 9. 23. 26. Breathing regularly again. No after-effect. Cap re-applied. |
| Period 6. Air alone, twenty-two seconds. | 9. 23. 45. Cap removed. Chloroform added. |
| Period 7. Chloroform, thirty-eight seconds. | 9. 24. 7. No after-effect. Still struggling slightly, but breathing regularly. Cap re-applied. |
| Period 8. Air alone, twenty-four seconds. | 9. 24. 45. Cap removed. Directly after the cap was taken away snoring began, it was therefore not re-applied at all. 9. 24. 57. Quiet. 9. 25. 9. Cornea insensitive; over. 9. 27. 33. Consciousness returning. 9. 28. 5. Patient carried away. |

This case demonstrates the vital necessity of not giving chloroform while struggling and irregular breathing make it unsafe to do so. It also shows that an after-effect during the vaso-motor stage of the fall of the blood pressure is not dangerous in itself, but that the anaesthesia was only prevented from going beyond this stage by the precautions which were taken to prevent overdosing. The time occupied to produce full anaesthesia was three minutes and

thirty-nine seconds, but during this time the patient inhaled air alone for one minute and thirty-seven seconds. The giving of air, alone, saved the patient from overdosing and did not delay the promotion of anaesthesia. As it was, an after-effect was produced in spite of all our precautions, which resulted in anaesthesia twenty-four seconds after the inhalation was stopped. It demands considerable moral courage on the part of the chloroformist to take away the chloroform the instant struggling and irregular breathing set in, and stand and look on while the patient's breathing becomes regular again. Seconds seem like minutes. But when it is understood that the uniform safety of the patient depends upon it, it is clear that the duty of not giving anything but air as long as combined struggling and irregular respiration continue, is binding and imperative, and a rule to this effect should be made absolute in the profession.

Conclusion.

The result of the researches of the Committees of 1864 and 1879 was to stabilize the doctrine that chloroform has a direct action upon the heart, and to establish that dread of sudden death from chloroform syncope which destroyed confidence in chloroform as an anaesthetic. The Hyderabad Commission proved that the dread of chloroform syncope is wholly without foundation, since chloroform has no direct action upon the heart, and that death can only occur from overdosing. To state the case in brief, the Hyderabad Commission substituted a wholesome fear of overdosing for the dangerous belief in sudden failure of the heart. The belief in heart failure frightens the chloroformist and leads him to watch the pulse for effects which are produced by the inhalation of too much chloroform, the very thing which those who are afraid of overdosing only strain every nerve to prevent. Accidents with chloroform can be prevented if the chloroformist is animated by the wholesome fear of overdosing and attends to the inhalation alone; they are inevitable if he is afraid of direct failure of the heart and takes the pulse as a guide.

NOTE ON THE PREVALENCE OF GOITRE AND ENLARGED SPLEEN AMONGST THE POPULATION OF MYMENSINGH.

By J. T. CALVERT, M.B. (LOND.), D.P.H., C.A.M.B., CAPTAIN, I.M.S.

MACNAMARA in his article on Goitre in Davidson's Hygiene and Diseases of Warm Climates—states, on the authority of a former civil surgeon, that half the population of the Mymensingh district suffer from goitre. Mymensingh, a large district in Eastern Bengal with a population of

three and a half million, has a district jail which constantly becomes overcrowded, and which has earned a bad reputation on account of the sickness and mortality amongst the prisoners. To ascertain how far this excessive sickness was due to preventable causes in the jail, and how much of it arose from the bad state of health of the prisoners on admission, I had been carefully noting for some months, before I came across Macnamara's statement above alluded to, the presence of malarial fever or its sequelae—enlarged liver, spleen, &c.,—in all newly admitted prisoners. In addition a note was now made of the presence or absence of goitre. In all 4,000 prisoners were examined between October 1894 and February 1897. The results are tabulated below:—

| | |
|--------------------------------|----------------|
| (1) 3,474 had no enlargement | ... 86.85 p.c. |
| (2) 252 had slight enlargement | ... 6.30 " |
| (3) 274 had well marked goitre | . 6.85 " |
| <hr/> 4,000 | <hr/> 100.00 |

It will be seen that 3,474 or 86.85 p.c. had no enlargement, 252 or 6.3 p.c. had slight enlargement, i.e., not sufficiently marked to strike a non-medical observer, and 274 or 6.85 p.c. had well marked goitre often of great size. Taking (2) and (3) together, we have 526 or 13.15 p.c. of cases of goitre occurring amongst adult males derived from all parts of the district, number which falls short of the original statement but is still sufficiently striking. It is very probable that the percentage of cases amongst an equal number of the female population would be much greater. Cretins would not appear to be numerous as only two cases came under my observation during the same period whilst touring in the district.

II. It may be worth while recording some of the results obtained regarding the prevalence of malarial diseases, and of these, the presence or absence of enlargement of the spleen may be noted. The following rough classification was adopted:—

Normal.—When the spleen could not be felt on palpation.

Slight enlargement.—When the edge of the spleen was felt below the costal margin.

Medium enlargement.—Anything from an enlargement extending 1 inch below the costal margin to an enlargement reaching to the umbilicus.

Great enlargement.—When the lower edge of the spleen extended below the umbilicus.

Between April 1893 and February 1897, 4,780 prisoners were examined with the result noted below:—

| | | | | |
|-------------|-----|--------|-------------|--------------|
| 4,305 | had | no | enlargement | 90.06 |
| 271 | " | slight | " | 5.67 |
| 153 | " | medium | " | 3.20 |
| 51 | " | great | " | 1.07 |
| <hr/> 4,780 | | | | <hr/> 100.00 |

4,305 or 90.06 were normal, 271 or 5.67 p.c. had slight, 153 or 3.20 p.c. medium, and 51 or 1.07 p.c. great enlargement of the spleen. Taking 2, 3, 4 together, we have 475 or 9.94 p.c. suffering from splenic enlargement. Owing to my sudden transfer from the district on plague duty, I regret that I have not been able to go over the jail record and note the relation if any, between the presence of enlarged spleen and goitre in the 4,000 prisoners examined for the presence of both these diseases.

Remarks.—Does the difference between the statement of a former civil surgeon, and the figures here recorded, mean a diminution in the prevalence of goitre in the district? In this connection it is interesting to record the opinion of a civilian, who returned to Mymensingh after an absence of some 15 years, and who remarked,—how few cases of goitre were to be noticed amongst the inhabitants now, compared with the numerous cases to be met with when he was first stationed in the district. Again in the Sadar station cases of goitre are not numerous. Such cases attending the Sadar dispensary are usually found to have come from outlying villages. Cultivation has greatly extended in the district of recent years, and the Sadar station has been supplied with filtered water from the river Brahmaputra since 1893.

AN OUTBREAK OF CEREBRO-SPINAL FEVER IN THE RAIPUR CENTRAL JAIL IN 1899-1900.

By W. HENVEY,

CAPTAIN, I.M.S.,

Superintendent, Central Jail, Raipur.*

IT will be convenient to, first of all, describe the cases as they occurred in chronological order, leaving for later consideration general remarks on the cause of the outbreak, the aetiology of the disease, the treatment adopted and finally such information as I have been able to gather on the literature of the subject. Full details as to the clinical history and post-mortem appearances of each case have been furnished in the monthly sick returns. It only needs therefore to recapitulate the most salient points in this report.

2. Since the 14th November up to the date of this report, a period of exactly two months, 14 cases in all have occurred, of which 12 have ended fatally, one has recovered and one is still under treatment.

Case I..—Khoodi, 35, male, Ganda by caste, an under-trial prisoner, was admitted into hospital from the under-trial barrack (XI A) on the 14th November, and died on the 16th November. Previous health good, general

* Communicated by the Administrative Medical Officer, C. P.

appearance healthy, muscular and well nourished. Onset of disease sudden ; ushered in with rigors. Said to be quite well the previous day. He had been only nine days in jail when attacked with the disease, and, being an under trial prisoner, had not been employed on labour, and had received the ordinary non-labouring diet according to the prescribed scale (Class II). The disease was very rapid in its course. The most prominent symptoms were : High fever (highest recorded temperature 104°) of an irregular type ; severe headache ; injection of the eyes ; tremors of the general muscular system ; rigidity of the back and neck ; early failure of the heart ; incontinence of urine and faeces, and albuminuria. At first, the symptoms clearly pointed to great cerebral irritation, which changed after the first day to a condition of coma, in which the man died. Treatment :—Phenacetine ; diaphoretic and diuretic medicines and purgation. Cold applications to the head and brandy in large quantities. The post-mortem examination shewed intense lepto-meningitis of the brain and spinal cord, with much exudation of yellow-greenish lymph in the sub-arachnoid space. The inflammation was most marked over the hemispheres, but the membranes of the whole central nervous system shared in the inflammation to a greater or less degree. The grey matter of the brain and the outer layer of the cord seemed to be softened. The interior of the brain was unaffected. The heart was much dilated and rather fatty. The lungs showed signs of basal congestion. The kidneys were large and inflamed (parenchymatous nephritis). The other organs were normal.

Case II.—Kejli, 35, male, Chamar by caste, a convict undergoing a sentence of nine months' rigorous imprisonment, was admitted into hospital from Barrack No. VIII on the 19th November and died the same day. Health on admission to the Jail indifferent, but much improved before the fatal attack. Employed on light labour, e.g., seed-picking and wool-cleaning. No previous admissions to hospital. In this case, the onset of the disease was more or less gradual, the man having suffered from fever for two days (or perhaps longer) before he reported himself sick. He walked to hospital on the afternoon of the 19th November and died the same evening at 10 P.M., thus being only about six hours under observation. The symptoms were those of high fever, and until just before the end, cerebral symptoms were conspicuous by their absence. He died in a state of coma, from failure of the heart. Treatment :—Diffusible stimulants and alcohol. The post-mortem examination showed intense inflammation of the scalp, sinuses and membranes of the brain, with, however, only very moderate effusion of lymph. The inflammation was more acute over the hemispheres than at the base, and there was not much exudation in the spinal canal. The other organs of the body were normal, but for some dilatation of the heart, and a certain amount of congestion of the lungs and kidneys. This case was a good example of the "fulminating" type of epidemic cerebro-spinal meningitis.

Case III. Balar, 63, male, Chamar by caste, an habitual convict, undergoing a sentence of two years' rigorous imprisonment, was admitted into hospital from Barrack No. V on the 17th November and died on the 21st November. Health on admission to the Jail bad, classed in the infirm gang and employed on very light labour. Onset of the disease gradual ; and for the first three days he was under treatment, the symptoms appeared to be those of ordinary malarial remittent fever. He was then suddenly attacked with right sided hemiplegia and aphasia, accompanied with impairment of sensation on the same side, which remained the most prominent features of the case until the end. There was never much cerebral irritation ; but during the last twenty-four hours of life, the paralysis gradually extended all over the body ; he suffered from retention of urine (which was found to be highly albuminous) and

he died in a state of deep coma with stertorous breathing, from paralysis of the vital functions. Treatment :—Quinine, diaphoretics, tonics, diffusible stimulants and brandy. No local treatment was adopted. The post-mortem examination showed an acute lepto-meningitis of the brain with profuse exudation of a greenish jelly-like pus which was distributed more or less uniformly over the hemispheres and base. The inflammation extended to the membranes of the cord, and the spinal canal contained a large amount of thick turbid lymph. The other organs of the body were normal, with the exception of the heart, which was enlarged and dilated and showed signs of fatty degeneration.

Case IV.—Manbodh, 33, male, Chamar, was admitted into hospital from Barrack No. VIII on the 19th November and died on the 23rd November. At the time of his death, he was undergoing simple imprisonment, but was employed on weaving blankets by his own desire to obtain the benefits of the mark system. Previous health good. No admissions into hospital. Onset somewhat gradual, having suffered from the premonitory symptoms of fever and malaria for two days previous to admission. Duration of the disease (in hospital) five days. The most prominent symptoms were :—Moderately high fever (103°) which gradually declined ; cerebral irritation, noisy delirium, pain in the occiput and neck ; weak, running pulse, incontinence of urine and faeces. Later, right sided facial paralysis was observed, but no aphasia, and instead of anaesthesia (as in a former case) hyperesthesia was present. Acute optic neuritis of the left disc was also found. In this case there was a distinct exacerbation of the disease, and it at one time appeared that the patient might recover : but he sank gradually and died on the 5th day of his illness in a state of deep coma. Treatment :—Salicylate of soda, brandy in large quantities, blisters and cold compresses. The post-mortem examination revealed the usual condition of intense inflammation of the two internal membranes of the brain and cord, together with great engorgement and congestion of the adjacent vessels and tissues. In this case, the inflammatory exudation was very profuse and had all the characters of true pus, and in contra-distinction to most other cases of this epidemic, large quantities of it were found at the base of the brain, especially in the region of the optic chiasma, the cerebellum and lower surfaces of the temporo-sphenoidal lobes. The other organs were quite normal.

An interval of almost exactly three weeks now occurred, during which the Jail was absolutely free from the disease. The following cases then occurred in rapid succession.

Case V.—Goberdhan, 20, male, Ghasia, an under-trial prisoner, was admitted into hospital from the under-trial Barrack (No XI) on the 12th December and died on the 14th December. Previous health good ; appearance strong and muscular. Had only been ten days in Jail, and was not employed on labour. Onset of the disease sudden, premonitory symptoms absent. This case was a very acute one from the beginning, though not so rapidly fatal as in some other instances. The most prominent clinical symptoms were high fever (highest temperature recorded 105.2°) at the commencement, which gradually declined ; pain in the right knee (no other joints affected), acute delirium and restlessness ; cephalgia, vomiting great subsultus tenudinum and general hyperesthesia of the body. The pulse from an early period presented its usual characteristics, viz., very weak, running occasionally intermittent and rapid (140° per minute). There was also complete incontinence of urine and faeces, but the former could not be examined for albumin. In this case only were the inguinal glands found to be somewhat enlarged, but the axillary glands could not be felt, and there were no signs of pneumonia. Towards the end

he became quiet, passing finally into a state of deep coma with stertorous breathing, and died on the third day from exhaustion and failure of the heart. *Treatment*:—Salicylate of soda in large doses, diffusible stimulants, alcohol and sinapisms. The *post-mortem* examination revealed acute lepto-meningitis of the brain and cord, with profuse exudation of thick yellow pus, distributed more or less evenly over the whole surface of the brain, but especially marked in the neighbourhood of the sylvian fissures and the temporo-sphenoidal lobes. The heart was enlarged and the left ventricle was hypertrophied; there was also some old endocarditis of the tricuspid valve. The lungs were slightly congested and the spleen shewed signs of old splenitis. The other organs were normal.

Case VI.—Sarha, 25, male, Kewat, a casual prisoner, undergoing a term of nine months' rigorous imprisonment, was admitted into hospital on the 16th December at 8 A.M., and died the same day, about eight hours later. He slept in Barrack No. XII, and was employed during the day on light labour (picking wool) in workshop No. V. Previous health, fair only; on admission to Jail, he was 12lbs. below his physical equivalent, and had been addicted to ganja. Onset, sudden with rigors and vomiting. Course of the disease extremely rapid—a typical "foudroyant" case. Clinical features, high fever (105°), early and complete failure of the circulatory system, great restlessness and subsultus tendinum, and paralysis of the sphincters. During the last hour or two of life, he was unconscious, but there were no convulsions, and signs of cerebral irritation were almost entirely absent. There is no more striking-feature in clinical medicine, to my mind, than the extraordinary failure of the heart in these rapidly fatal cases of cerebro-spinal fever. Drugs and stimulation seem to have absolutely no effect, and the patient dies apparently from cardiac inhibition produced by the virus of the disease acting directly on the medullary centres, centres, exactly in the same way as an overdose of some strong poisonous drug would act, e.g., chloral. The *post-mortem* examination showed general inflammation and engorgement of the scalp, sinuses, and membranes of the brain and, to a certain extent, of the brain tissue itself. Exudation was commencing in places, when life was cut short, but there had evidently been no time for the formation of true pus. The lateral ventricles and theca spinalis also contained an excessive amount of clear serum. The inflammation was less acute at the base than elsewhere. The other organs of the body showed general engorgement and congestion, especially at the bases of the lungs and in the liver; but no other gross lesion was observed.

Case VII.—Udhal, 18, male, Chamar, a healthy well-developed youth, was admitted into hospital from Barrack No. XII, on the 13th December, and died on the 17th idem. Previous health during the four months he had been in jail, good; 14lbs. above his physical equivalent; employed on tape-weaving in workshop No. 3. Onset of the disease gradual and atypical, cerebro-spinal fever not being suspected till the second day. Duration of the disease five days. Symptoms:—High fever of an irregular type, vomiting; cephalalgia, pain in dorsal spine, lateral decubitus (a classical symptom of the disease); Kernig's sign moderately marked; constipation—and from the commencement—a soft running intermittent compressible pulse. Later stiffness and rigidity of the neck and sterno-mastoid muscle supervened, but no actual opisthotonus or tetanus. On the fourth day, patient became very violent and restless, with incontinence of urine and faeces and great subsultus tendinum; and he died, in strong convulsions (an unusual feature), on the 5th day. The urine was albuminous. *Treatment*:—Large doses of iodide and bromide of potassium; wet cupping over the loins; sinapisms; brandy, bovril, chicken-broth and egg-soup in large quantities. The *post-mortem* examination showed the usual condition of lepto-meningitis of the brain and cord, with

an extraordinary profuse exudation of thick greenish nearly fluid pus. Base less affected than upper surfaces of hemispheres. Lateral ventricles full of blood-stained serum. Substance of the brain itself unaltered. The heart showed a condition of hydropericardium, with dilatation and atrophy of the left ventricle. The lungs were deeply engorged at both bases. The spleen was the subject of old splenitis, and the kidneys and liver were greatly enlarged and congested.

Case VIII.—Dum-Dum (*alias* Dhiraji), 40, male, Chamar, a strong healthy habitual criminal, undergoing a sentence of nine months' rigorous imprisonment, was admitted into hospital from Barrack No. 3 on the 22nd December at 7 A.M., and died four hours later. He had only been seventeen days in jail, during which time his health was good. The day previous to his death, he had been working at the oil-mill. Onset of the disease sudden, with rigors; course extremely rapid; "foudroyant" in type. Symptoms:—Moderate fever (101°); coated tongue, relaxed bowels, cephalalgia and pain in the back; Kernig's symptom very marked; early failure of the heart and vomiting. He retained consciousness almost up to the last, and died from cardiac failure and collapse somewhat suddenly. *Treatment*:—Digitalis, strichine and brandy. The *post-mortem* examination revealed commencing acute lepto-meningitis, the feature of this case being the intense congestion, and the quantity of dark fluid blood that flowed from the cut tissues and vessels. There was no exudation of lymph or pus formation. All the organs of the body were much congested and hydropericardium was again observed.

Case IX.—Yakub Khan, 51, male, Mahomedan, shopkeeper, was admitted into hospital from Barrack No. V on the 20th, and died on the 26th December. His previous health had been bad on first admission to jail, but was very fair before his last illness, his weight being up to the physical equivalent. Employed in the tailor's shop. At time of his death, he had completed nearly eleven months of his sentence of two years' rigorous imprisonment. Onset of the disease sudden, with rigors; course atypical at first and decidedly protracted; death occurring on the seventh day, this being the longest observed case save one. Symptoms:—Irregular and high, fever (highest temperature recorded = 105°), restlessness, severe headache, lateral decubitus, Kernig's sign well-marked, general hyperesthesia of the body, rigidity of the limbs especially the arms, and from the fifth day left facial paralysis. Vomiting was not observed. The urine (which was twice examined) was highly albuminous; later incontinence of urine and faeces, with respiration of a Cheyne-Stokes character supervened, and death occurred gradually from asthenia. In this case, the heart was not affected till quite late, but extreme restlessness was a prominent feature throughout. *Treatment*:—At first, the drugs ordinarily used for malarial fevers, later digitalis, strichine and brandy were mainly depended on. The occiput was also blistered. The *post-mortem* examination showed the usual conditions observed in this disease. The pus was very profuse all over the brain and along the cord and of a greenish yellow color. The frontal and parietal lobes and the lower surface of the cerebellum were the parts most affected. The other organs of the body were practically normal, except for the kidneys, which presented the typical appearance of Bright's disease (chronic interstitial nephritis).

Case X.—Mangloo, 40, male, Chamar, was admitted into hospital from Barrack No. IX on the 26th December and died the same day, after being $9\frac{1}{2}$ hours under observation. Previous health during the fortnight he was in the jail, good. Employed on oil-mill in workshop No. II. Onset of disease very sudden; ushered in with rigors and vomiting. Was working up to within a few hours of his attack. Course of the disease very rapid. Another "fulminating" case. Most marked symptoms were—High fever (104°) on admission, which, however, fell

rapidly to 99°; vomiting, diarrhoea (the only case in which this symptom has been observed); complete failure of the heart and circulatory system and paralysis of the sphincters. Except for severe pain in the head and limbs, there were no special signs of cerebral irritation, vomiting continued to the end. Although extremely restless, he retained consciousness almost to the last, and death occurred somewhat suddenly, obviously from failure of the heart. *Treatment* :—Sinapisms to cardiac region, blisters to the calves, digitalis, strychnine and brandy. The *post-mortem* examination showed commencing lepto-meningitis of the brain and cord, with intense general congestion of the surrounding tissues and vessels, and a moderate exudation of clear serum in places under the arachnoid membrane. There had been no time for the formation of pus, but the spinal canal was filled with clear fluid. The heart showed hypertrophy of the left ventricle and old endocarditis of the mitral valve. The lungs were practically normal, and, but for some slight mottling on their outer surfaces, not even congested. The other organs were quite normal, except for an enlarged malarious spleen.

Case XI.—Sukhdeo, 38, male, Chamar, a healthy middle-aged man, who had completed four months of his sentence of six months' rigorous imprisonment, was admitted into hospital from barrack No. V on the 29th December and died the next day, after an illness of 20 hours' duration. Previous health good. Was working as an outside sweeper the day previous to admission; onset sudden; no premonitory symptoms. Course very rapid. *Symptoms* :—High fever (temperature, 106°), weak heart action, imperceptible pulse, diaphragmatic respiration, vomiting. In this case, but for the fact that the eyes were much injected and the expression of face anxious, cerebral symptoms were quite absent. Kernig's sign was not found; no restlessness or cephalgia; decubitus dorsal; no paralysis, squint or convulsions. The fatal issue obviously resulted from paralysis or inhibition of the heart, which failed to respond in the remotest degree to active treatment in the shape of sinapisms, diffusible stimulants, strychnine and brandy. The *post-mortem* examination showed early meningitis, with a moderate exudation of milky-white lymph, but no true pus. The cord, which was extracted and examined throughout its length, presented much the same appearance, and the theca was full of inflammatory exudation, which extended some way along the sheaths of the nerves. The heart was enlarged, with hypertrophy of the left ventricle, hydro-pericardium, a thinned tricuspid valve and a deeply stained endocardium. The other organs were normal, except for general congestion, and a commencing acute bronchitis of both lungs.

Case XII.—Derha, 42, male, Chamar, an unhealthy-looking, toothless, broken-down man, was admitted into hospital on the 6th January from barrack No. VI, and died on the 13th January. At the time of his death, he had completed about two and-a-half months of his six month's sentence and had not been previously in hospital. He was beginning to put on weight, but was in the 3rd class for labour. Onset of the disease rather sudden, the temperature rising to 105° within 36 hours; no premonitory symptoms such as rigors or vomiting. Course more protracted than usual; about the third and fourth days there was a distinct improvement in his condition, but he then passed into a "typhoid" state and sinking gradually, died on the eighth day. Most prominent clinical symptoms were:—High fever, descending gradually to the 4th day, after which the temperature was normal or subnormal; at first, great cerebral irritation, as evidenced by restlessness, delirium, lateral decubitus, rigidity to neck, injection of conjunctive, photophobia and muscular tremors. Kernig's sign at first well marked, but later quite absent. Vomiting was not observed, and the bowels were constipated throughout. This condition of cerebral irritation was succeeded on the fifth day by a state of

apathy and extreme weakness. The man's appearance was exactly suggestive of an enteric fever patient in the third or fourth week, the tongue being dry, brown and cracked, the teeth covered with sordes, severe herpes labialis appeared and basal pneumonia developed. Other symptoms observed at one time or another during the progress of the case were—(1) deafness, which rapidly increased until at last he was nearly stone-deaf; (2) left facial palsy, with deviation of the tongue to the right; (3) paralysis of the left 5th nerve (or one of its roots) as evidenced by the loss of reflex action in the left eye and extreme injection of its conjunctiva; (4) carphology and great subsultus tendinum; and (5) albuminuria. The heart in this case was not affected to the same extent as usual, and it is interesting to observe that, on this account, the patient, although a man of poor physique and bad health, made a far longer resistance to the disease than many others—his superiors in health and strength, but whose hearts failed from an early date. Death occurred apparently from exhaustion and asthenia on the eighth day of his illness at 8 P.M. *Treatment* :—This was the first case in which, at the suggestion of Lieutenant-Colonel J. L. Poynder, I.M.S., Civil Surgeon of Raipur, I tried acid salicylic, administered in 6 or 7 grain doses every three or four hours. Although the drug did not succeed in saving the patient, I think it had a distinctly good effect, and it was no doubt efficacious in keeping the temperature low. In addition, digitalis, strychnine and brandy were freely given and the usual local treatment was adopted. The *post-mortem* examination showed a very emaciated body with practically normal organs, except for a patch of broncho-pneumonia at the base of each lung, and an extensively diseased brain and cord. The exudation in this case was very profuse and of a thick greenish-yellow appearance; it was found in larger quantities over the upper surfaces of the hemispheres than at the base; and, as is invariably the case, it was especially marked in the sylvian regions and over the temporo-sphenoidal lobes. The cord was similarly affected with acute exudative meningitis.

It will be seen that the above twelve cases were all fatal. It now remains to describe two cases more, one of which recovered and one of which remains under treatment at the time of writing this report.

Case XIII.—Koliha, 21, male, Chamar, a strong healthy youth; was admitted into hospital from Barrack No. X on the 4th December, and was discharged cured on the 5th January, being thus thirty-two days under treatment. In an obscure disease like cerebro-spinal fever, it is of course somewhat difficult to make sure of a diagnosis until the patient comes to the *post-mortem* table, especially in view of the fact that the symptoms in many cases are masked or atypical. Had the present epidemic not been recognised, there is no doubt that this man would have been returned as suffering from severe malarial remittent fever. But with other cases of the more serious disease occurring both before and after his admission to hospital, I have no doubt now in my own mind that the diagnosis was correct, and that he was in fact suffering from meningitis of a mild type. The symptoms at first were much the same as those that have already been described (*vide* especially Cases VII and XI), i.e., great cerebral irritation, cephalgia, general pains and hyperesthesia of back and limbs violent delirium for the first 48 hours, which, however, gradually passed off; vomiting, dyspnoea and hurried shallow respiration; a weak and intermittent pulse, and finally albuminuria. The temperature was remittent in type and came down to normal on the ninth day. It rose again, however, at the end of the second week, whether as the result of a relapse or of concomitant malaria, it is impossible to say. For a long time, the patient was very weak and feeble and seemed to be much shattered, but tonics and liberal feeding eventually restored him to health, and he was discharged

to the "Infirm and Convalescent Gang" after an illness of thirty-two days' duration. His health is now quite good. The treatment consisted of salicylate of soda, digitalis, nuxvomica, turpentine, quinine and antiperiodics, later iron and vegetable tonics.

*Case XIV.**—Tholo, 45, male, Gond—the case still under treatment—was admitted into hospital on the 5th January from Barrack No. II. His is a very typical case and began in the usual way with great cerebral irritation, being succeeded (as in Case XII) by a "typhoid" state, with the exception of the single recovery, this will be by far the most protracted case yet observed. For some days past, he has been in a very weak and low condition, but I have a single hope of his recovery. His case will be detailed on its termination in the next instalment of this report.

I shall now proceed to make a few brief remarks on the clinical features and *post-mortem* appearances on the twelve fatal cases above described, regarded as a whole. Certain symptoms stand out prominently, and to my mind by far the most important and interesting of these, both from a therapeutic and pathological point of view, is the failure and paralysis of the heart.

The heart, more than any other organ of the body, responds promptly to therapeutic or other influences. But in these cases of meningitis, especially in those of the "fulminating" type, the cardiac centre seems to be paralysed or inhibited almost from the commencement of the disease, and as it is inconceivable that at that early stage the medullary centre can be mechanically affected, i.e., by direct pressure of inflammatory lymph, or by raised intra-ventricular pressure, the only tenable hypothesis is that the bacterium of the disease secretes a virus which acts as a direct poison on the centre in the same way as curare, digitalis, &c., would act, if administered in excessive doses. In hardly a single case have I seen any even temporary benefit result from cardiac stimulation either by drugs or local means. It is possible that faradism might be of use, and it has occurred to me that saline transfusion might at any rate help the heart by raising the general blood pressure. But neither of these appliances were at my disposal, and the ordinary methods of local counter-irritation and stimulation proved quite unavailing. The centre for respiration is also undoubtedly affected in the same way, but not to the same extent. This is shown by the early dyspnoea, diaphragmatic respiration, and towards the end not unfrequently respiration of a Cheyne-Stokes character. On the other hand, the lungs are hardly ever affected, except for a moderate amount of hypostatic congestion of the bases, which is probably due to purely mechanical causes and supervenes only shortly before death. In no case have I observed true croupous pneumonia. In addition to the central affection of the circulatory system in the twelve cases now under consideration, the heart itself has usually been found to be pathologically

altered. Whether this is a coincidence or not, I am not prepared to state dogmatically. But seeing that in at least three-fourths of the cases some morbid condition has been observed, e.g., hydro-pericardium, hypertrophy of the left ventricle, and vegetations on, or thinning of, a valve, it seems not improbable that the heart is affected, either directly by the circulation of the virus, or indirectly in its endeavour to overcome the central nervous inhibition.

As might be expected, symptoms of intense cerebral irritation are usually present at any rate at the commencement of the attack. It is only in those extremely rapid cases when the patient dies in a few hours from (as has already been explained) paralysis of the vital centres, that they are occasionally absent. The symptoms are very various and hardly in any two cases do they altogether agree. Broadly speaking, they indicate firstly, irritation of the cortical centres during the period of vascular engorgement and commencing exudation of inflammatory products, and secondly, inhibition of the cortical centres (as evidenced by deafness, paralysis, coma, &c.) during the period of raised intracranial pressure, when the pus or lymph has been fully developed, and is pressing directly on the cortex. In the same way, the almost constant loss of power over the sphincters shows that the lumbar centres of the cord are similarly affected, and the general hyperaesthesia of the body indicates involvement and irritation of the roots of the spinal nerves with exudation. I have never, however, been able to localise any special lesion in the general inflammation of the central nervous system, which would satisfactorily account for some of the definite symptoms observed during life, such as one-sided facial paralysis or optic neuritis. But perhaps this is hardly to be expected in view of the widespread nature of the inflammatory process, which most cases attain before the fatal issue. Lastly, albuminuria is a striking and fairly constant symptom. It was observed in nearly every case in which the urine was examined, and the albumen was generally present in considerable quantities. Whether this again is accidental or whether it depends on an inflammation of the kidneys resulting from the general blood-poisoning, I cannot say definitely, but the latter hypothesis seems the most likely. Turning to the pathological aspects of the disease one point again stands out prominently, wherever the cases of this epidemic seem to differ decidedly from previously recorded cases, and that is in the existence of acute inflammation and more profuse pus formation over the hemispheres and temporo-sphenoidal lobes of the brain, as compared with the inflammation and pus formation at the base. All authorities*

* Lee and Barlow (Allbutt, Vol. 7) recognise both types. We have found both types in recent outbreaks.—ED., I.M.G.

that I have been able to consult, agree in stating that the disease is primarily one of the base of the brain and of the cord. But I have no hesitation in affirming that in my series of cases, exactly the opposite condition has existed, and I am inclined to put the fact forward as a reason why many of the classical symptoms of this disease (for example opisthotonus, lateral decubitus and constant vomiting) have not been prominent features in many of the cases in the present epidemic. The appearances in the 12 post-mortem examinations afford a beautiful object lesson in the theory of inflammation. In the "fulminating" or rapidly fatal cases, nothing but intense engorgement and congestion the initial phase in the process of inflammation, are observed. In those cases, which survive two or three days, the same engorgement, etc., is noticed, but accompanying it is an early deposit of clear serum which frequently distends and raises the arachnoid membrane across the sulci, or of a milky-white fluid lymph. The exudation is invariably observed in two bands or layers, accompanying the superficial cerebral vessels on each side, and is most profuse in the region of the sylvian fissures. Lastly, in those cases which linger several days, practically the whole surface of the brain and cord is covered with a thick, often tough layer of yellow or greenish-yellow lymph (in some cases, however, the exudation exactly resembles true "laudable" pus.) The arachnoid and pia mater are welded together in one layer and cannot be separated. Sometimes the pus or lymph seems to be confined between the sulci or fissures, giving rise to an appearance of definite abscess formation. But this is only apparent, and I have never observed a localised abscess, nor an extension of the inflammation into the cortex. The whole substance of the brain, the internal capsules and the basal ganglia are always normal. The lateral ventricles generally contain an excess of turbid or blood-stained serum; and the choroid plexuses are often swollen and congested. The dura mater in protracted cases is always very adherent to the calvarium. The portions of the brain which are most affected are (in order of frequency) the sylvian regions, the temporo-sphenoidal lobes, the lower frontal convolutions, the base of the cerebellum and the fissure between its two lobes, and the space between the occipital lobes and the underlying cerebellum. The spinal cord always participates in a greater or less degree in the general inflammation, and in those cases which have survived more than a day or two, the spinal canal contains an enormous amount of thick yellowish (sometimes blood-stained) turbid lymph.

Note.—Since writing the above, a case has occurred in the person of a middle aged female (the only woman hitherto attacked) in which there was an enormous amount of thick,

greenish, organised lymph generally deposited, but in which the exudation was distinctly more profuse at the base, thus corresponding closely with the classical descriptions of the disease.

4. The etiology of cerebro-spinal fever will now be considered. This disease must rank with plague, isolation, yellow fever, relapsing fever, dengue and some others in the category of "mysterious" maladies, of which either little is known as to their causation, or which furnish a fine field for medical polemics by reason of the extreme variance of the theories promulgated concerning them. In these days of the microbic theory of disease, when even heat apoplexy is said to be an infective malady and not caused by heat (*vide Dr. Sambon's paper in British Medical Journal, 19th March 1899*) it would be strange if a specific germ had not been found for cerebro-spinal fever. This has in fact been isolated by Weischelbaum, who calls it the "Diplococcus Intercellularis" and the same, or a very similar coccus has been lately described by Major W. J. Buchanan, I.M.S., as occurring in a recent epidemic at the Bhagalpur Jail (*Indian Medical Gazette, December 1899*). On becoming aware of this, I sent specimens of the inflammatory secretion and inoculations on agar-agar tubes from cases to Professor Hankin, Chemical Examiner to Government. His report was as follows:—

"That staphylococcus albus and aureus were isolated from the cultures obtained from both prisoners. Small cocci and a diplococcus were also isolated from the cultures of Coberdhan. Other foreign microbes were also observed in several of the cultures. The portion of brain was not examined."

(To be continued.)

A MIRROR OF HOSPITAL PRACTICE.

FOUR CASES OF ABDOMINAL OPERATIONS AT THE MOOLTAN HOSPITAL.

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THE proverb that it never rains but it pours was exemplified at this hospital between the 2nd November 1899 and the 11th December 1899, when no less than four cases of abdominal operations were performed. Such operations are very infrequent in this district, as the people are much averse to operations that they have not heard of before.

CASE I.—On the 2nd November 1899, a female named Bakhtawir, aged 25 years, was admitted with a large ovarian tumour of four years' standing. The tumour was of such a size that it interfered seriously with respiration and had affected the general health very considerably.

As she was weak and ill-nourished, it was considered advisable to feed her up for a few days.

On the 15th she was given a warm bath, and an aseptic poultice of carbolic acid was applied to the abdomen. The bowels were also well cleaned out.

On the 16th the operation was performed in the usual manner. The tumour was only slightly adherent to the abdominal wall, but extended upwards up to the stomach and liver pushing these organs towards the chest.

The pedicle was broad and was divided between two sets of three chain ligatures, the incision being made between the two sets. The tumour arose from the left ovary, the right being normal.

Very little sponging of the abdominal cavity was required, and no drainage tube was inserted. The wound which extended above the umbilicus was closed with silk-worm gut and was sprinkled with iodoform and dry dressings applied. The operation was performed at 2 P.M. At 6 P.M. she vomited once and the temperature was 96°. The urine was drawn off at 9 P.M., when 3 ozs. were removed. At 3 A.M., on the 17th, the catheter was again used with no result. At 8 A.M. the temperature was 99° and at 10 A.M. 21 ozs. of urine were drawn off; she vomited twice on the 17th at 10 A.M. and 6 P.M. After this there was no vomiting, but the only diet that agreed with her at first was milk and water. Brand's essence and soup were distasteful.

On the 2nd castor oil was given, and then an enema resulting in a few motions.

On the 23rd the wound was dressed and found quite healed, the sutures were removed on the tenth day, but the binder was applied till she left hospital on the 23rd December 1899. She was purposely kept in hospital as long as possible to permit the wound to consolidate. When discharged she was supplied with an abdominal belt.

Before discharge she put on flesh rapidly, and when again seen a fortnight after discharge was quite fat and looking many years younger.

The actual tumour weighed four pounds and 20 pints of fluid were evacuated. It was of the usual multi-locular variety.

CASE II.—On the 19th November 1899, a woman named Hawwa Mai, aged 26 years, was admitted with an abdominal tumour of four years' duration. I had seen her the year before when I removed some fluid from the tumour with a trocar, and intended operating on her then, but owing to the occurrence of a case of plague in the hospital it had to be closed.

The tumour was central—no clear history could be obtained from the patient as to whether it commenced in the groin or not. After the usual preparations she was operated on the 21st. There was a large deposit of fat in the

abdominal wall, which rendered it so thick as to materially interfere with the operation, as owing to the abdomen not being much distended the length of the incision had to be limited.

On exposing the tumour it was found covered with a reddish membrane, showing a regular net of vessels. There were no adhesions. After the fluid, which was thin in consistence, had been evacuated, the pedicle was found to be broad and short, and it was with difficulty that a double row of ligatures could be placed between the tumour and the uterus without encroaching on the latter. Chain ligatures were again employed and the tumour removed—the incision passing through the ovary. The tumour was unilocular and evidently was a broad ligament cyst of the left side. It contained four pints of clear fluid. The fluid had no albumen in it. The ovary was normal, but was attached to the base of the tumour which, however, was separate from the ovary.

The wound was closed and dressed like the former case.

There was no rise of temperature, no sickness, but for three or four days she was continually wanting the catheter to be passed.

The bowels were moved on the sixth day, when the wound was dressed for the first time. It had healed by first intention. The sutures were removed on the tenth day, but, as in the former case, the binder was retained till the patient's discharge on the 27th December 1899, when a binder was supplied.

CASE III.—Nurai, a widow, aged 40 years, was admitted into hospital on the 11th December 1899 with a large tumour of the abdomen which caused her much trouble. No exact information as to the date of commencement could be obtained, but it was at least of four years' standing. She states that it began on the left side. The tumour was diagnosed as partly ovarian and partly fibroid.

After preliminary preparation she was operated upon on the 14th. After the abdomen was opened, it was found that the tumour was a fibroma of a very large size. The incision had to be carried up to within two inches of the xiphoid cartilage, and even then it was with considerable difficulty that the tumour could be delivered from the abdomen. The broad ligaments on both sides were so stretched that it was impossible to place the wire of the *Serre Naud* round the base of the tumour, so they (broad ligaments) were divided between two chains of ligatures till only the uterus was left. On the left side there was considerable haemorrhage from the broad ligament, the source of which was evidently a vein, as when the remains of the ligament were held up, it stopped and began again immediately the stretching was stopped. Finally it was found that one of the chains of ligatures had slipped off. This was attended to and the

haemorrhage ceased. The wire of the *Serre Nœud* was then passed round the remainder of the pedicle and tightened, after which the tumour was removed. The incision passed through the middle of the body of the uterus. The larger part of the uterus was only slightly enlarged, the tumour growing from the left and upper part. The pedicle was treated by the extra-peritoneal method—two pedicle needles being passed and the rest of the wound was closed with silk-worm gut. Owing to the bleeding from the left broad ligament a considerable quantity of blood had passed into the abdominal cavity and had to be sponged away.

The operation took two and a half hours, being completed at 5.30 P.M. At 10 P.M. the patient was very restless and was given m. 30 liq. morphia. On the 15th the temperature was normal and the pulse good; she slept off and on during the day. The temperature in the evening was again normal.

On the 16th she passed urine of a dark red colour as if it had been mixed with blood—unfortunately none was kept for examination. At 8.30 A.M. she began coughing, the sputum being stained with blood. The pedicle was dressed and it and the wound were found healthy. The temperature was normal and the pulse good.

On the 17th the patient was found jaundiced and there was a large discoloured painful swelling on the left forearm, evidently an ecchymosis. There had been no more haemoptysis during the night of the 16th and up to 8.15 P.M. on the 17th. The urine too was now clear and normal in appearance. Temperature and pulse were normal.

The female Assistant-Surgeon had been to see her at about 8.10 P.M., when the patient was found to be progressing very favourably. She had no sooner reached her quarters than she was sent for only to find her patient moribund—having vomited up a large quantity of blood.

No post-mortem examination was allowed. The course of the case after operation is very interesting, but the cause of the haemorrhagic condition is open to conjecture. The patient had no cough before operation. The loss of blood at the time of operation was not such as to produce any severe shock; the temperature and pulse were normal and the wound to all appearances progressing favourably. I cannot find an example of a similar case in the authorities at my disposal, and would be glad of an expression of an opinion as to the cause of the haemorrhages. Could it be due to thrombosis passing up to and also affecting the inferior vena cava? This could account for the jaundice and the final haematemesis, but could it cause the ecchymosis of the left arm and the early haemoptysis? I am inclined to think that the cause was one affecting the system as a whole.

CASE IV.—*Hydatid Cyst*—Ahmada, son of Haji, aged 30, was admitted on the 18th November 1899, with a tumour in the epigastrium. No definite history could be obtained from him. The tumour had been present for a year. It caused him pain after eating and palpitation. It was painful on pressure. It occupied the epigastric triangle and bulged evenly; a slight longitudinal depression could, however, be seen in the middle line. The tumour felt almost solid, and it was first doubtful whether it was a solid tumour or a cyst. On percussion, however, a peculiar thrill was obtained, which with the rounded outline of the tumour and absence of fever led to the diagnosis of hydatid, probably of the liver. He was first kept under observation for some days. On the 1st December an incision was made in the middle line over the tumour, which was found to be connected with the liver. At the upper part the cyst wall was quite evident, but towards the lower and right side there was a reddish membrane over the tumour. This membrane was very vascular and was probably the longitudinal ligament of the liver. To make certain of the diagnosis, a hypodermic needle was passed into the cyst and a little clear fluid was removed.

The cyst wall was then sewn to the peritoneum and a trochar passed into the cyst. After most of the fluid had been removed the cyst was picked up and opened between two forceps; the cut edges of the cyst were then sutured to the abdominal wall. On pressure being made, more fluid came away and several hydatid cysts. With a forceps the internal lining membrane of the cyst was removed and the cyst washed out. In all 17 ozs. of fluid were evacuated. A large drainage tube was then inserted, and the wound was sutured up except at the part where the tube protruded. Dry dressings were then applied. The cyst was subsequently washed out, first with boracic lotion, and then after the 8th with a lotion consisting of one teaspoonful of tincture iodine to 6 ozs. of water.

The temperature on the 2nd was 99.6°, on the morning of the 3rd it was 99°, and thereafter normal.

On the 5th a small cyst came away: on the 9th he was progressing favourably.

During the night of the 9th he was seized with severe diarrhoea, accompanied with suppression of urine, and died on the evening of the 10th.

At the *post mortem*, which was limited, the wound was found healed and the cyst wall firmly adherent to the abdominal wall. The cyst was quite healthy in appearance and had contracted very satisfactorily. At first it extended backwards in the right lobe of the liver for at least four inches. Nothing

in the cyst or wound could be discovered which could account for the diarrhoea. At first I was inclined to suspect that it might have been in someway connected with the iodine lotion, but as this was weak, and all excess lotion was removed by a syringe with india-rubber tubing attached to the nozzle, I do not think such could have been the case.

In all the above operations I had the very valuable assistance of Captain Richard Heard, I.M.S.

SOME ABDOMINAL SECTIONS IN MOFUSSIL PRACTICE.

By C. R. M. GREEN, F.R.C.S., D.P.H. (CAMB.),
MAJOR, I.M.S.,
Civil Surgeon of Muzaffarpur.

(1) *Cyst of the Pancreas.*—Ooris, a slim, healthy Mohamedan boy of 10 years of age, was admitted into the Mitford Hospital, Dacca, on 10th September 1899, with a painful swelling in the abdomen.

Previous History.—With natives this is never reliable, but it is stated that the swelling was first noticed a week ago. It has increased in size since first noticed, and he has had fever with pains in the abdomen. He had had colic-like pains in his belly for a long time, at intervals of a month or more, lasting three or four days at a time. The bowels were not constipated during these attacks and there was no vomiting.

Present Condition.—Tongue clean; temperature 99° F., pulse 100, respiration 28. The abdomen is distended by a round tumour, centrally situated, the size of a melon, occupying the epigastric and umbilical regions, but extending into the flanks. The tumour gives a feeling of fluctuation and a thrill on palpation. It is dull on percussion except at the upper margin. It is not movable. The skin moves freely over it. There is tenderness on pressure. The apex beat of the heart is normally situated. The dulness is not continuous with the liver dulness.

On the 11th and 12th his evening temperature was 99·4° F., the morning temperature being normal.

Operation.—On September 13th, his bowels having previously been well cleared out, he was given chloroform, and with the usual aseptic precautions a 3-inch median incision was made through the abdominal wall, over the most prominent part of the tumour. The peritoneum was adherent to a blue-walled cyst by soft adhesions. The cyst was tapped, and some 14 oz. of turbid serous fluid removed. The opening in the cyst was enlarged, and some gelatinous coagulated serum removed. An attempt to clear the cyst from the surrounding structures failed, as it was universally adherent and the adhesions vascular. With the fingers inside the cyst no

connection could be felt with the kidneys or neighbouring organs. The cavity caused by the partial separation of the cyst, and the interior of the cyst were sluiced out with boiled water. The edges of the cyst were stitched to the abdominal wall, the cavity of the cyst filled lightly with iodoform gauze, and the wound dressed. The serous fluid removed was very albuminous. No digestive tests were tried as the remaining fluid was, unfortunately, thrown away.

After History.—The temperature never rose above the normal. The wound was dressed three days after the operation and afterwards daily. The cyst cavity filled up rapidly so that eight days after it was only $\frac{3}{4}$ -inch deep, and soon after he was discharged with the wound quite healed.

Remarks.—That this was a cyst connected with the pancreas is probable from its central position, its immobility, from there being a distinct cyst wall, and the character of the contents of the cyst. These points distinguished it from peritoneal or mesenteric cyst, or an encysted dropsy of the peritoneum. No omental mantle over the cyst was distinguished. As regards treatment Mayo Robson says in the *Medical Annual* for 1897, aspiration has been abandoned in favour of laparotomy on account of the cyst refilling when emptied by aspiration, and because the stomach or colon are often stretched out over the surface of the tumour. Kreecke states, that out of 27 cases treated by section and drainage, all recovered, while out of six treated by dissecting out the cyst, three died, hence the advisability of dissecting out the cyst is very doubtful. As to the method of the formation of these cysts, many are the direct result of injury. Cathcart says: "The injury causes a laceration of the gland. This is followed by extravasation of blood, with this is mixed pancreatic secretion from the torn ducts. Not only is a constantly-increasing fluid thus added to the original haematoma, but the collection of fluid probably becomes irritating in character. It will thus tend to excite the formation of a capsule around it, and by chemical irritation, and tension, would gradually increase in size."

Alban Doran gives the fullest account I have seen in the *British Medical Journal* of 18th December 1897, and illustrates his article with diagrams of the different ways by which a pancreatic cyst comes forward. The age at which they occur chiefly is between 20 and 30. The routes are:—

(1) The pancreatic cyst is in the lesser cavity of the peritoneum. The lesser omentum and the stomach are in front, as part of its capsule. There are only a few examples of this.

(2) The cyst is in the lesser cavity of the peritoneum but lower. The stomach invests the upper part, and the transverse colon the lower. This is more common.

(3) The cyst makes its way forward between layers of the transverse mesocolon, and has the colon in front, or a little above or below it.

(4) The cyst is in the general peritoneal cavity below the lower layer of the transverse mesocolon. This is the most common, and appears to have been the way the cyst had come forward in the case I have recorded.

It is to be noted that nearly every recorded case of pancreatic cyst occurring in the female has been mistaken for an ovarian tumour.

CASE (2). *Cyst of the right ovary.*—Nowabibi, aged 28, a female Mohamedan, was admitted into the Mitford Hospital, Dacca, on 4th September 1899, with a painful swelling in the lower part of the abdomen.

History.—It is stated that about a year ago she had pain in the right side, low down, and noticed a swelling, in the same situation, about the size of an orange. Since then, the swelling has been getting larger, and she has had attacks of pain lasting for three or four days. She menstruates regularly but the period is shorter, and the discharge less in quantity than formerly. The appetite is fair, and the bowels act regularly.

The patient is fairly well nourished. She has never been pregnant. There is a large hard swelling occupying the lower belly; it extends from the pubes to two inches above the navel, and is somewhat the size and shape of a water-melon. The movability of the tumour is limited.

No thrill or fluctuation are detected on percussion. The internal organs appear normal. No examination was made per vaginam until the patient was under chloroform ready for operation. The sound was then found to pass somewhat to the left, but to the normal distance. The tumour appeared closely connected with the uterus and to be situated largely to the left side.

Operation.—After careful preparation and with the usual precautions chloroform was given on September 15th, 1899, and a 3-inch incision made below the navel in the middle line. On opening the belly cavity, a glistening tense cyst wall came into view. It was tapped and about two pints of dirty looking fluid evacuated, and the cyst brought out. There was little pedicle, but it allowed of a Staffordshire knot being tied. The cyst was cut away, the left ovary examined, Douglas' pouch swabbed out with sponges, and the abdominal wall closed by a running suture of the peritoneum, and then interrupted silkworm gut sutures through the skin and muscle. Iodoform and dry absorbent cottonwool formed the dressing.

After Course.—For the next two days only drachm doses of hot water and Brand's essence (alternately) every hour were given. On the third day, after the bowels had acted from the effect of castor oil, some sago and milk were given. Her highest temperature after the operation was 100·60. The only complication was that on

the fourth day after operation she had six loose motions. This diarrhoea continued, and rose mucus appeared in the stools as well. This mild attack of dysentery lasted six days, and was treated with seidlitz powders and pulv. ipecac. co.

On the tenth day after the operation the dressings were changed and the sutures removed. The wound was healed but for a little superficial rawness. She was discharged quite well on October 12th, 1899.

Remarks.—I am unable to account for the mild attack of dysentery after the operation. This cyst was unilocular and probably originated in the broad ligament near the ovary. The Fallopian tube elongated and stretched out could be traced on the wall of the cyst.

CASE (3). *Unilocular cyst in connection with the right ovary growing between the layers of the broad ligament.*—Nanda Rani, aged 32, spare but in fair health, a low caste Hindu female, was admitted into the Dacca Hospital on 25th September 1899.

There is a tumour occupying the abdomen globular in shape, and extending upwards to half between the umbilicus and ensiform cartilage. She states that she noticed a swelling in the lower part of the abdomen about two years ago, and since then it has gradually increased in size. After noticing the swelling she had an acute attack of pain in the belly one day while walking. The pain lasted some days. Latterly she has felt no pain. Her menstruation is free but regular. She has never been pregnant. There is a distinct thrill felt on percussing the tumour and fluctuation on palpation. The tumour appears slightly movable.

On vaginal examination, the cervix was found to be directed to the right. The body of the uterus could not be distinguished from the tumour, and moved with the tumour upwards and to the left.

Operation.—After the usual preparation, the abdomen was opened by a 4-inch incision in the middle line, a tense cyst evacuated. The fluid was a dirty, dark brown in colour. The cyst was found to have grown between the layers of the broad ligament and penetrated downwards, so that there was no pedicle and it was partially encapsulated. After a good deal of trouble and some haemorrhage the cyst was evacuated from its capsule and a broad thick pedicle formed. The edges of the bed, from which the cyst was dug out, were tied in interlocking sections and sutured. The pedicle was secured by a Staffordshire knot. In doing this a small portion of the cyst wall was inadvertently included, as was seen on the cyst being cut away. After cleaning up, the wound was closed by a continuous suture of the peritoneum, and interrupted silkworm gut sutures of the abdominal wall. The operation took one hour and forty-five minutes.

At about twelve hours after the operation the patient shewed symptoms of collapse, but was brought round by Mr. Milchem, the House Surgeon, giving her hypodermics of ether and strychnia. On the evening of the operation (September 28th) her temperature rose to 101°, as it did also on the second day after the operation. For the next four days it remained below 100°. She had no sickness, and there was no distension of the abdomen, but she complained of pain in the lower part and appeared to be doing well. On the seventh day after operation she had an evening temperature of 102°. It continued raised, with evening exacerbations up to this point, until the fourteenth day. From the fourteenth day it was normal in the morning with a slight evening rise, that gradually subsided.

On the twelfth day after operation the dressings were removed and the sutures taken out. The dressings were sweet and the wound united, but there was a hard doughy swelling in the right hypogastric region extending nearly as high as the umbilicus. There was no fluctuation, but a good deal of tenderness. P. V. a hard mass was felt occupying the right cul, and fixing the uterus.

A small incision was made through the skin over the mass in the right groin, and a small trocar thrust in. A little bloody serum escaped.

After this the swelling gradually disappeared and she slowly recovered.

Remarks.—There is no doubt that a haematocele formed in the broad ligament from which the cyst was enucleated, and gave rise to the swelling and fever. As in the preceding case the Fallopian tube was stretched over the tumour. On the inner surface of the cyst there were some papillomatous looking growths.

In the above three cases my thanks are due to Assistant-Surgeon Kunja Lal Sanyal, Teacher of Midwifery, and Assistant-Surgeon Gopal Chunder Chatterjee, Teacher of Surgery, for their careful preparation of the patients for operation, in the after-treatment and for their valuable assistance at the operations.

(4) *Unilocular Cyst in Connection with the left ovary. Torsion of the pedicle—Strangulations.*

Garbini Bagdini, a low caste female prisoner, was sentenced, and admitted into the Bankura Jail on 9th October 1896.

Her health was noted as indifferent on admission. My attention was not called to her until 2nd November 1896. She then complained of pain in the abdomen, and on examination a movable tumour was found occupying the umbilical region. It was a firm resilient tumour, the size of a medium-sized melon. It was rounded, but there was a sort of notch in the right-hand border. It could be easily pushed about the abdomen. There was tenderness and the patient had some fever.

On vaginal examination the culs felt clear. The uterus could be easily felt, normal in size, somewhat low and to the left. On drawing up the tumour no drag was felt on the uterus.

On the 3rd November she complained of more pain, and her temperature at 4 P.M. was 103° F., on the morning of November 4th, 100° F.

Operation.—On 4th November at 4 P.M. her condition was such that I determined to operate without further preparation. She was put under chloroform, and the abdomen opened by a 4-inch incision in the middle line. On opening the peritoneum congested omentum was seen and was drawn up after breaking through some soft adhesions, and a dark purple mass exposed with bloody serum about it. At this period, the administration of chloroform was stopped on account of the breathing ceasing, and the pulse failing. With artificial respiration she came round, and the operation was proceeded with. The wound was enlarged, and the tumour brought outside. It was then found to have a long twisted pedicle running down to the left-side of the uterus. The pedicle was clamped, ligatured and cut through. Douglas' pouch was cleaned, the omentum replaced, and the wound closed with silk worm gut interrupted sutures. The patient's pulse was good after the operation.

The tumour was found to be an intensely congested cyst. Its surface was rough and covered with sticky blood-stained lymph. Blood was extravasated into the walls of the cyst and ovary. The Fallopian tube was traced on the upper and posterior wall of the cyst, ending in a tuft of fimbria. The congested haemorrhagic ovary was found on the wall of the cyst to the lower and inner side of the tube.

After History.—Three hours after the operation the patient's temperature was 102° F., but fell to normal the next morning. It rose again to 101.2° that evening, but fell during the second day after the operation and did not rise again. She was troubled with thirst at first and that was all.

The wound was dressed fourteen days after the operation and found to be healed. The sutures were removed.

I saw her three months afterwards stout and in robust health. The scar was firm and shewed no signs of yielding.

Remarks.—This was an interesting case and demonstrated the advantage of early operation. The patient's condition would have been much worse if the operation had been delayed; as it was, she had fever at the time of operation, from the effects of the strangulation of the tumour. The congestion of the tumour was so great that it appeared like a congested spleen.

First Grade Civil Hospital Assistant Ashutosh Chatterjee was of great assistance to me and took great pains in carrying out the after treatment.

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ENTERIC FEVER IN INDIA AND THE
WATER-SUPPLY.

THE recently published report of the Sanitary Commissioner to the Government of India as usual deals in a very interesting manner with the increasing prevalence of enteric fever in India. It is not possible for us to follow the report in all the details it gives about this disease. We propose only to notice one of the least satisfactory points in connection with enteric fever in India; this is, that in spite of the very greatly increased attention paid in all Cantonments and Military Stations to the water-supply, yet enteric fever so far from being decreased has steadily, and in the last two years especially, largely increased. That this is a fact the following table shows:—

| Year. | Admissions p. 1,000 of strength. | | | |
|-------|----------------------------------|-----|-----|------|
| 1890 | ... | ... | ... | 18.5 |
| 1891 | ... | ... | ... | 20.4 |
| 1892 | ... | ... | ... | 22.1 |
| 1893 | ... | ... | ... | 20.1 |
| 1894 | ... | ... | ... | 20.9 |
| 1895 | ... | ... | ... | 26.3 |
| 1896 | ... | ... | ... | 25.5 |
| 1897 | ... | ... | ... | 32.4 |
| 1898 | ... | ... | ... | 36.9 |

This * shows a steady, and on the whole progressive, increase in the number of cases of this disease; in fact the number of cases per 1,000 of strength has actually doubled in the last nine years. This increase, it will be noted, has been more during the past three years, and the unsatisfactory point in this is that it is for the past four years that special attention has been devoted to the question of purifying the water-supply, by the use of permanganate of potash, boiling the water and other means which suggest themselves to the medical officers in charge. It appears then, at first sight, that increased attention to the purification of the water-supply has only resulted in

an increase in the number of enteric cases. This can only be explained in one of two ways, either the methods of purification were imperfectly carried out, or all sources of water-supply were not so treated, or these measures, admirable in themselves and thoroughly or not carried out, were not directed to the real cause of the evil, or, to put it in plain words, the water-supply is not the main or most important vehicle for the infection.

Before going further in support of this somewhat heretical doctrine, it will be well to quote the opinions of some of the medical officers themselves who had charge of the cases.

The Medical Officer in charge of the Barrackpore Station Hospital reports that, in accordance with prevailing scientific opinion, the greatest care was devoted to the food and drink, but that "all such methods having proved useless," he abandoned all attempts to purify the ingesta of the soldier. In the first half of 1898 no attempt was made to purify the water and there was no enteric; in the second half of the year he, "with great reluctance," began to use the alum method of precipitation, and it is curious to note that the occurrence of enteric fever cases coincided with the periods in which the water was "treated" in some form or other. The Medical Officer of Bareilly is of opinion that "the endeavour to trace the origin of enteric in milk or water will not meet with success." In Lucknow enteric fever "has made gigantic strides" coincidentally with the disuse of the wells in barracks and the use of water from the River Goomtee. At Chakrata, since 1896, the water has been reported "pure and free from bacteria" (*sic*), "but none the less enteric has increased by leaps and bounds." In Mandalay though the "water is liable to all kinds of contamination," yet the station is singularly free from enteric, cholera and other water-borne diseases. In Mhow prior to the introduction of the Baircha supply the enteric fever case-rate "was only half what it now is in spite of all our precautions recently adopted." In Quetta the water-supply seems to come from "an ideal source, a deserted spot, thirteen miles away, well-fenced in, a perennial stream from the mountains." The catchment area is an ideal one, the medical officer writes, and the water is beyond suspicion, yet Quetta suffers notoriously from enteric fever; and as a result

* The returns for 1899 are not yet published, but the following figures are approximately correct, and indicate a distinct change for the better. There were 1,410 admissions and 348 deaths, or an admission ratio of only 20 per mille. The case death-rate is still very high, 24 per cent. It is too soon to comment upon the significance of these figures.—ED., *I.M.G.*

of his special investigation Major A. M. Davies, R.A.M.C., agrees that the water-supply is probably not the cause of the enteric fever outbreaks in that station.

The above opinions (and many more such might be quoted) go to show that in the opinion of many medical officers the water-supply is not the main or chief cause of enteric fever in India. No doubt many soldiers contract the disease in the bazaars, where the water-supply is far less satisfactory than in cantonments, yet the soldiers did the same ten years ago; yet in spite of the "improved" water-supplies to cantonments the disease has doubled itself in the decade. The question then to be grappled with is not so much the prevalence of the disease in India as the causation of its *greatly increased* prevalence, and that too in spite of the various and numerous sanitary improvements which have been introduced. There is one point which is frequently emphasised by medical officers and that is that "boiling" the water is often a farce. This can however be made a reality by the use of the whistle to the Larymore boiler, and by putting a responsible non-commissioned officer in charge of this work, but to boil the water alone is of no use, unless it can be served out to the soldier in a cool and well aerated condition. The soldier will not drink luke-warm insipid water, however free from germs; moreover, unless the cooling is done rapidly, there is no doubt that the warm tepid water is a most favourable breeding ground for germs of all kinds. Therefore, while it is clear that many medical officers do not accept the water-borne theory of enteric, yet before giving up this highly reputed theory we must be sure that the boiling and purification of the water has been thoroughly carried out. At present we consider the methods of cooling most to blame, and attempts should be made to introduce a means of rapidly cooling and aerating the water, by means of a rotatory fan, or such-like contrivance, and the water while thus treated must be kept free from dust. An experiment should be made on these lines, either in cantonments or in jails (where the same question exists of the connection between dysentery and the water-supply) before the water-borne theory is condemned. At present all that can be said about the origin of most "water-borne," so-called, diseases is that, while the water has been proved to be the cause of

widespread and sudden epidemics, it has certainly failed to explain isolated cases or groups of cases of cholera, enteric or dysentery, or the persistent slight prevalence of such diseases in a community.

TUBERCULOSIS IN INDIA.

The prevalence of tuberculous diseases in India is a subject which has been several times discussed in these columns, and in the new volume of the Report of the Sanitary Commissioner with the Government of India (for 1898), Dr. A. Crombie contributes an interesting note in the form of a report to the India Office of his delegation to attend the Tuberculosis Congress in Berlin in May 1899. Dr. Crombie commences by briefly summarising the conclusions of the Congress as to the essential nature of the disease, and the questions of etiology and heredity. These points were dealt with in our columns at the time of the Congress; at present we propose only to refer to the question of the prevalence of the disease in India. When we use the word "Tuberculosis" in its broad sense implying all forms of local tuberculous disease, we agree with Dr. Crombie in saying that "they take quite a subordinate place in the sickness and mortality of India," but, on the other hand, tubercle of the lung or phthisis* is certainly almost as common in many parts of India as it is in England. Certainly we believe most of our readers will agree that "scrofulous" or "strumous" diseases of the glands and joints are much less common in our Indian hospitals than in any European one. Chevers stated that he never even saw a case in India. Dr. Crombie quotes Webb,† Waring, and Birch as agreeing that scrofula is very rare in India. Tabes mesenterica is apparently also rare in India, but in the case of children we may remember that it is practically impossible to obtain autopsies, and

* On this point we might refer to the numbers of cases which are still returned as "chronic phthisis" in especially the returns for British troops. It is found that what is meant in nine cases out of ten is "Tubercle of the Lungs," that is, "Phthisis" caused by the bacillus of Koch. This being so such cases should be returned simply as "Tubercle of Lungs." To say that a case is not "Tuberculous" needs the support of a bacteriological examination. In most cases it is only the old-fashioned word 'Phthisis' which is preferred.

† A very interesting account of tuberculosis in India is to be found in Allan Webb's *Pathologia Indica*, a rare old book, well worth reading.

the case would probably be returned as "chronic diarrhoea." Cases do certainly occur among European children in India, but nothing like to the same extent as in Europe. Tuberculous peritonitis is, in our experience, by no means uncommon in India; we have seen cases both in sepoys and in prisoners. Dr. Crombie notes that he never saw a case of tuberculous disease of the hip joint in India, and Birch, with his vast experience at the Medical College, Calcutta, agrees with this opinion.

On the other hand, tuberculous disease of the lungs is far from uncommon in many parts of India, perhaps it is more so in the damper parts than in the drier regions. That phthisis is common among Gurkhas and among Burmans is well known. The statistics of troops are somewhat misleading upon this point; the figures show that the rate of admission among sepoys for tubercle of lungs is only 2·5, but it must be remembered that these are picked men in the prime of life. In jails, on the other hand, the death-rate fairly represents the adult male population of the Province, and among them we find an admission rate of about seven per mille, and a death-rate of about three per mille. Dr. Crombie is apparently inclined to think that the ratio of tubercle of lungs has increased of late years in jails, but on this point, from an examination of the *post-mortem* records of several large Central Jails in Bengal, we are of opinion that it is only more accurate diagnosis which is responsible for the apparent increase. Let any one who doubts this read through the *post-mortem* records and he will find numerous cases returned as deaths from "chronic diarrhoea" or "chronic dysentery," in which there is noted plain evidence of advanced tuberculous disease of the lungs. Then again Goodeve and Moore years ago pointed out how apt tubercle of the lungs is to run a latent course in the Native. The patient will perhaps complain only of diarrhoea, or weakness, or fever, or less often of cough, unless the lungs are examined the diagnosis may not be made till the body is on the *post-mortem* table. In public dispensaries over and over again it will be found that a man is treated for "cough" or "fever," or such symptom when he is really suffering from tubercle of the lungs. So far from phthisis having increased of late years in the Jails of India, we believe it is on the decrease rather, and that cases are more carefully diagnosed and examined than they used to be.

Dr. Crombie can find no law indicative of the influence of climate on the prevalence of phthisis. The figures from year to year are too contradictory to be of any use in this connection. The question of racial immunity is also a difficult one. As regards India, it would appear that Dogras and Gurkhas suffer most, Rajputs and Sikhs least, but as these figures refer only to picked men in the prime of life in regiments, they are of not much value in attempting to settle this question. For our own parts we think the damper, moister climates of India produce the most cases of tubercle, while in the case of hill tribes their known liability may be to a great extent due to their habit of living for sake of warmth and comfort in close, small, ill-ventilated houses, which also explains the high death-rate from consumption in Russia and Austria. While, therefore, we maintain that tubercle of the lungs is by no means an uncommon disease in India, we agree with Dr. Crombie that tuberculosis, as a whole, is certainly prevalent to a lesser degree than in Europe, and the causes of this lesser prevalence as given by Dr. Crombie will be accepted by all. These are briefly as follows:—

- (1) The comparative infrequency of bovine tuberculosis in India. It is not unknown, but is certainly rare, though it will never be fully known to what extent Indian cattle are subject to this disease, till the tuberculin test has been more largely made use of.
- (2) The Indian habit of boiling the milk certainly must prevent much tuberculosis being spread by milk and explains the immunity of native children from *tabes mesenterica*.
- (3) Beef is little used, and stall-fed oxen are unknown in India.
- (4) The flesh of the goat is much used, and it is an animal refractory to tuberculosis.
- (5) Dr. Crombie also mentions the open-air occupations of the natives. This is chiefly applicable to the rural population, nor do the natives of India universally use mat or reed huts; millions in the N.-W. Provinces and Punjab inhabit close, small ill-ventilated houses with thick mud walls, they however sleep in verandahs or in the open air at night for most months of the year.
- (6) Dr. Crombie also mentions his abstinence from alcohol as being in favour of the native of India.
- (7) The use of *ghi* instead of butter would have some effect in a like direction. Again much of the immunity of native children is due to the infrequency of diseases, predispos-

ing to tubercle, as whooping cough and scarlet fever. Measles is not rare in India, but it is almost invariably mild, a fact which contrasts strongly with the extreme mortality which has been attributed to measles in Egypt, where it is the most fatal disease of childhood.

We have only touched upon some of the interesting points raised in Dr. Crombie's report; for our own part when we remember the well known reluctance with which the native of India admits fresh air and light into his house we wonder not that phthisis is not unknown, but that it is not more prevalent. Part of the explanation apparently is that in Dr. Crombie's words the "Native of India appears to have instinctively adopted all the dietetic habits best calculated to protect him against bovine tuberculosis."

LONDON LETTER.

THE MIDWIVES BILL.

THE Bill now before Parliament has for its object the protection of the public by insuring, as far as that is possible, that women who undertake the management of natural labour shall be competent and qualified, and that such persons shall not undertake responsibilities and duties, such as attending "cases of abnormal labour, or of disease, or of danger to the mother or the child, for which they are not qualified." There are three interests which are mainly affected by this measure, namely, the interests of the public which are paramount, of medical practitioners, whose occupation and perhaps income may be diminished by the legal certification, registration, and licensing of a class which has hitherto held the title and status of nurse, and has worked mostly in subordination to the qualified man midwife; and of the midwives, who in recent years have sought to fit themselves for their work by attending courses of instruction and training, and obtaining certificates of proficiency and competence. The present Bill proposes to constitute a Central Midwives Board, similar in some respects to the General Medical Council, for the purpose of supervising the education, examination, certification and registration of midwives.

The rights of midwives already in practice are protected, and the local supervision of all midwives is placed in the hands of county and borough councils, who are empowered by the act

to issue licences and to suspend from practice under certain circumstances; also to investigate charges of malpractice, negligence or misconduct and report the same, if established, to the Central Midwives Board, to which the power is given to remove names from the roll on account of sundry offences. Penalties are prescribed by the act for obtaining a certificate or license by false representation, or acting without a certificate or license, or for "wilful falsification of the roll." This bill, which there is every reason to believe will become law substantially in the present form, is greatly exercising the mind of the medical profession which is divided as to the need of any legislation on the subject at all, and as to the merit of this particular scheme of legislation. The principal objection taken is that the midwife under the new law will assume an independent and antagonistic position as regards the medical practitioner, and will not incline as often as she ought to call him in when the labour is not "natural," or when any disease or danger threatens mother or child. It is sought to append to the act a schedule defining the circumstances under which medical assistance should be sought; but apart from the difficulty of making these definitions exhaustive, or rendering penal the failure to recognise the need of help in time to be of service, it will probably not be considered proper to load an Act of Parliament with technicality of this kind, and the upshot will probably be to leave such matters to the conscience and common sense of all concerned, guided by the general principle above quoted. It is also urged as a grave imperfection in the act that no penalty is prescribed for midwives, who fail to call in medical aid when circumstances arise, which the law will give her no right or title to deal with.

A NEW SORT OF UNQUALIFIED ASSISTANT.

The General Medical Council has practically abolished the unqualified assistant. There is a suspicion that under the new Act this individual may revive under a new guise and of a different section. It is surmised that an understanding may be arrived at between the registered practitioner and the registered midwife that they should hunt in couples; the practitioner covering the midwife, who will do the easy and cheap midwifery and refer in difficulties to her principal; associations of this

kind are not unknown under present conditions, and they might be mutually advantageous under the new law; but the objections to the employment of an unqualified substitute, for all the purposes of practice would not apply to the new alliance. On the whole, the arguments urged against the "midwives bill" are not of a very weighty character, and the public will undoubtedly gain by being placed in a position to discriminate with ease between the trustworthy and qualified midwife, and the ignorant unskilled monthly nurse.

MALARIOLOGY.

This is no misprint for Mariolatry, the worship of the Virgin Mary, but the new name for the science of malaria, which is having a new nomenclature of a somewhat formidable character invented for it. Major Ross, in a report on the Malaria Expedition to Sierra Leone, which has recently been published by the Liverpool School of Tropical Medicine, proposes the terms "haemamæbiasis" and "guat fever" as substitutes for the old time-honoured names "malaria" and "paludism." This is driving home the mosquito theory with a vengeance; but apart from the question whether the theory covers the whole ground of malaria infection, the first word is an awkward mouthful, and the second savours of triviality. The same report furnishes a vocabulary of Greek compounds, descriptive of the phases of transformation of the plasmodium *malariae* in its passage through the mosquito which is appalling. *Amæbulæ* develop into sporocytes or gamocytes; the latter are male containing microgametes or female containing a macrogamete; the impregnated macrogamete becomes a zygote and divides into meres, each of which becomes a blastophore; the zygote bursting emits blasts, each of which becomes an amæbula, so the cycle of life is completed.

MALARIA AND PETROLEUM.

A very interesting leaderette in the *British Medical Journal* of 31st March (p. 787) records, on the authority of Mr. C. W. MacIntosh of Liverpool, the fact that the workmen on the petroleum field at Apolonia, West Africa, appear to be immune from malarial fever. He notes that there are no mosquitos in the locality, and that the water of the place is impregnated with petroleum. Mr. MacIntosh surmises that the existence of mosquitos is rendered impossible

by the condition of the surface water and thus explains the absence of malaria. It would be interesting to ascertain whether similar circumstances in India are associated with a similar immunity. He also notes the absence of fever and mosquitos in the Chad basin in Central Africa when the water is brackish. There are large tracts in India where the soil is impregnated with alkaline salts and the water is brackish. It would not be difficult to ascertain whether fever and mosquitos are rare or absent in such areas. Dry regions in India such as Marwar offer conditions unfavourable for mosquito life during the greater part of the year, and these deserts are said to be immune while the dryness lasts. It is, of course, open to advocates of the soil origin of malaria to attribute such exemptions to soil conditions inimical to the life of organisms. It is known that the bacilli of enteric fever and cholera speedily die in peaty soils, and this may be true of soils impregnated with petroleum and salts as regards the malaria germ. A few careful observations would settle these questions which are of considerable interest and importance.

THE LONDON MEDICAL GRADUATES' COLLEGE AND POLYCLINIC.

The First Annual Meeting of the Institution was held on the 28th of March and gave evidence of success. The number of members and subscribers who have joined it amount to 606, and classes and consultations have been arranged on a liberal and thorough scale to meet the requirements of graduates desirous of maintaining their knowledge of their progressive profession and studying specialties to which they had not time to give full attention in their student days. A good commencement has been made in forming a library, and a handsome building is being erected for a museum. Laboratories have also been organised and a monthly journal started. In all this work Mr. Johnathan Hutchinson has taken a leading part and has liberally assisted the enterprise with advice and money; besides devoting time and labour to teaching and editing the journal. Funds are needed to place the college on a satisfactory and efficient basis, and, as the public benefits in more ways than one by the work done in the polyclinic, an appeal is being made to the wealthy and philanthropical, which, it is to be hoped, will not be in vain.

Current Topics.

MALTA FEVER IN INDIA.

It is a fact not without significance that it was only when modern bacteriological methods were applied to the study of the fevers of India that the possibility of "undulant" or Malta fever existing in this country was entertained. We are not aware of any cases which had been clinically recognised as Malta fever till Professor Wright announced the fact that he had found the serum reaction of the micrococcus melitensis in the cases of ten soldiers in Netley invalidated home from India. Of course we do not refer to cases of the disease which were recognised in the persons of soldiers and sailors who had been previously in Mediterranean ports or stations, but it was never clinically recognised as a fever of India. Indeed, bearing in mind his experience in Calcutta and Bengal generally, Dr. Crombie went so far as to say that if bacteriological methods pointed to the existence of such a disease in Bengal he would be disposed to doubt the accuracy of the observations.

It is probable, however, that the disease may exist among the European soldiers in India and not to any extent affect the Native population, as indeed it is said to do in its home in Malta.

This question has been suggested to us by a perusal of a very interesting paper by Captain G. Lamb, I.M.S., read at a recent meeting of the *Bombay Medical and Physical Society*. Captain Lamb says that the serum reaction of Malta fever is one of the most delicate of bacteriological tests. By means of this test Major Birt and Captain Lamb have been enabled to recognise as Malta fever cases invalidated home from India as "gonorrhœal rheumatism," "simple continued fever," "debility," "rheumatic fever," "enteric fever," "malaria," &c. Since the date of Professor Wright's announcement of the discovery of the serum reaction in cases of soldiers invalidated for other diseases, ten other examples have been found at Netley, who had been invalidated for enteric fever or rheumatism. It is worthy of note that no less than 14 out of the total of 20 such cases came from one station in the Punjab, viz., Mian Mir; the other places where the infection has occurred are at Calcutta, Sabathu and Nowshera. "Since coming to Bombay a few months ago," continues Captain Lamb, "I have satisfied myself that Malta fever is present here also. I have found the serum reaction in three cases, and Major Lyons has shown me a case in which the blood agglutinated with the micrococcus melitensis, and which was clinically typical of the disease. I am certain that this reaction

only requires to be carefully looked for to be found in many cases of anomalous fever now occurring in our midst."

It seems to us that this paper by Captain Lamb is a most important contribution to the problem of the unclassified fevers of India. When the question of the existence of Malta fever in India was first raised in India there was, we know, a tendency to doubt the accuracy of the bacteriological observations, but the paper, we have just quoted from, shows that this serum test has now been thoroughly well established, and we are bound therefore to take notice of what it indicates, it must, therefore, be admitted that what is called Malta, or as the late Captain Louis Hughes proposed to call it "undulant fever," does occur in India, and it behoves all who meet with anomalous cases of fever to remember this possibility, and to apply the serum test, the bacterial emulsions and sedimentation tubes for which can be obtained from the Research Laboratory in Bombay.

THE PREVALENT DISEASES OF THE PHILIPPINES.

A RECENT issue of the *Johns Hopkins Bulletin* contains an interesting preliminary report on the work of the expedition sent by that University to the Philippines to investigate the diseases of that newly-acquired portion of the dominions of the United States. The Commission was composed of the following medical men: Dr. Simon Flexner, Dr. L. F. Barlow, with whom were associated at their own expense Messrs. J. M. Flint and P. F. Gay, students of the Medical School. The Commission spent about three months in the Islands, studying the chief diseases of the American troops and of the natives.

Of the diseases affecting the native population they notice the prevalence of numerous skin diseases, especially "dhabie's itch" and an affection closely resembling Delhi boil. Small-pox is also prevalent to a considerable extent among the natives, and the Spanish authorities of the Islands appear to have paid but little attention to vaccination. A definite focus for leprosy exists in Luzon, many lepers being confined in the Lazar Hospital. We refer in another place to the question of tuberculous diseases in India, and in this report we find that in the damp moist heat of the Philippines tuberculosis is a common disease. It is also pointed out that tuberculosis of the lungs is a common complication of cases of beri-beri and of leprosy. As regards venereal diseases it is agreed that syphilis does not prevail unduly, though chancroids and gonorrhœa are very common. Beri-beri of course is one of the chief diseases of the parts and is described both as endemic and epidemic. During the stay of the Commiss-

sion an epidemic appeared among the prisoners, Filipinos, confined at Cavite. Some 200 cases appeared within a few weeks with a death-rate of from 20 to 30 per cent. The oedematous, the paralytic and the mixed forms of the disease were all observed.

So much for the diseases affecting the inhabitants of the islands, among the American land forces the chief diseases were of what is described as of the "enteric" class, that is to say, dysentery, diarrhoea, enteric fever and what are here called "gastro-intestinal catarrhs." Many of the cases of diarrhoea were only preliminary to dysentery, which proved to be the most formidable disease which the American soldiers encountered. Dysentery appeared in three forms, the acute, sub-acute and chronic. In the acute form the whole of the large intestine and usually the lower part of the ileum are involved. In the sub-acute and chronic forms ulcers are present in the mucosa and the coats of the intestine are greatly thickened. In the sub-acute and chronic cases amœbæ are often present, but are variable as to actual occurrence and numbers. Large hepatic abscesses, usually single, were encountered in a number of cases, but amœbæ were not constantly present in the liver abscesses, in fact the study of dysentery in connection with liver abscess is noted as not satisfactory,—a result which will not surprise us in India, in fact it would seem as if what Lafleur described as "amœbic dysentery" was likely to turn out to be merely a picture painted from the accidental occurrence in the same patient of dysentery and an abscess of the liver. The Commission note that the amœba was frequently found in cases ready for discharge, and was frequently absent in acute cases with marked symptoms. A careful study was made of the bacteriology of dysentery, and two groups of bacilli were differentiated (1) those having an affinity with the group of the *bacillus coli communis*, and (2) those having affinity with the group of which the *bacillus typhi* is a type. In the case of those of the *B. coli* group the agglutination was variable, being constant and sensitive with the blood serum of the same individual (host) and inconstant, and active in strong solutions only, in serums from other individuals. In the case of bacilli of the *typhi* group agglutination was constant and sensitive with the serum of host as well as sera of other individuals suffering from dysentery, while it was inactive with the serum of healthy patients or with those suffering from beri-beri, typhoid, or malaria. One bacillus of the second group would seem to be identical with the one isolated by Shiga in Japanese dysentery which we referred to in an article in our last issue. This bacillus of Shiga is regarded as an important factor in the dysentery of the Philippines.

PLAQUE PROPHYLAXIS IN THE MAURITIUS.

CAPTAIN J. S. STEVENSON, I.M.S., has submitted an interesting report on the Haffkine prophylactic in the outbreak of plague in the Island of Mauritius. Out of a total of 19,418 persons inoculated only 75 got plague, while in the non-inoculated population there were 1,349 cases of the disease. The death-rate for the inoculated who were afterwards attacked was 54 per cent. while it was 78 for the unprotected. This difference of 24 per cent. in favour of the protected does not, however, according to Captain Stevenson, fairly represent the full benefit derived from the inoculations. It was ascertained that there were about 300 concealed cases, and if these are added to the cases among the unprotected community and a further deduction made for an exodus from infected areas, the difference works out in favour of the inoculations at about 70 per cent. which is what is generally claimed as the figure for India. Very few ill effects were noted after the inoculations. In order to reduce the inflammatory reaction after inoculation, there was administered to each patient a dose of calcium chloride for three days. On this point there is quoted in the report an interesting table by Lieutenant-Colonel E. Cretin, I.M.S., the result of his observations on the men of the 1st Bengal Infantry, stationed in Mauritius. There were 703 sepoy and 85 followers of the 1st Bengal Infantry inoculated, and to all the sepoy was given a dose of calcium chloride with the following results:—

| | |
|--|-----------------------|
| 20 men had no Ca. Chl.— | |
| Reaction marked in slight | 35 per cent. 65 " |
| 275 had Ca. Chl. after inoculation— | |
| Reaction marked in slight | 32 per cent. 68 " |
| 408 had Ca. Chl. before and after inoculation— | |
| Reaction marked in only slight | 4 per cent. 96 " " |

From this it appears that the administration of doses of calcium chloride, both before and after the inoculations, has a good effect in diminishing the febrile reaction, and will thus tend to make the procedure more popular. It is also noted by Lieutenant-Colonel Cretin that the sepoy on the average lost about 3lb. weight daily after inoculation for 3 days, but regained it as rapidly.

Captain Stevenson also gives a few notes which seem to show that in some cases other diseases are benefited or even cured after the inoculations, e.g., cases of rheumatism and rheumatic fever. Yersin's serum was tried on a fairly large scale in the Mauritius outbreak, but the reports are unanimous against its efficacy. It would appear from reports on the plague in the island of Madagascar that plague disappeared with the onset of the heavy rains. This was noted at Tamatave where it is quaintly stated that the "microbes were washed away and

buried in the sandy soil." Such a statement looks like a hasty generalisation from a too short experience of a single outbreak and reminds us of the prophetic announcements of the *British Medical Journal* of a few years ago on the expected behaviour of the plague in India.

ON "WASHING" DYSENTERIC STOOLS.

PROFESSOR KENNETH MCLEOD has an interesting note on the examination of the intestinal evacuations in dysentery in the *Edinburgh Medical Journal* for April. The practice of washing dysenteric stools seems confined to India, at least text-books on tropical diseases say nothing about it. The information gained by the process of washing the stools is summarised by Dr. McLeod as follows:—

1. The colour of the fluid indicates the amount of blood contained in the evacuations, according to the depth of the tint when it is sanguous.

2. The size, shape, and character of feculent masses when solid may be noticed, and inferences may be drawn as to the condition, calibre, and tone or irritability of the diseased gut.

3. The nature and activity of the digestive process may be inferred from the state of the excreta. Undigested masses of meat or farina may be seen, or curdy lumps of imperfectly digested milk observed.

4. The character of the ingesta may be determined. Imperfectly masticated and undigested pieces of potato, vegetables, or fruits are easily identified, and grains of unboiled rice or sago discerned, and seeds of oranges, figs, grapes, etc., described. Many of these things sink and are seen amongst the residuum. The dieting of the patient can thus be very effectually watched and controlled.

5. The lighter particles of mucus float in the water, and this may be flocculent or tenacious—clear, rosy, branny, orropy. Inferences are drawn from these characters, as regards the stage and intensity of the dysenteric process and effects of treatment. Clear or rose-coloured flecks indicate an early (catarrhal) stage; branny particles, a dysentery undergoing satisfactory cure; and rosy masses, a slower process of recovery in a more protracted case.

6. The residuum may show blood clots of various kinds and sizes, masses of jelly-like mucus, lumps of more solid inspissated mucus, and casts or exuviae of various sorts. These latter are the most important pathological products, indicating a grave malady of some standing, and destructive lesions of varying kind and degree. The nature of the destructive process may be surmised from the character of these casts or sloughs. They may be pulpy and circular, or oval, soft, and disruptible, yellowish or greenish, consisting of a pus-infiltrated mucosa,

and representing castings off of an inflamed mucosa or submucosa. They may be stringy, tenacious, and angular, consisting mostly or entirely of detached submucosa. They may be greenish or drab-coloured, thick, large, or cylindrical, the result of coagulation necrosis of an extensive diphtheritic deposit on and in the walls of the intestine. They may be dark, pulpy, offensive, and soft, due to a process of gangrene. The relation of these different products to diagnosis, prognosis, and treatment is obvious and most important.

7. The products thus obtained can be subjected to further examination, for bacteria or amoebæ for example, or preserved with spirit or carbolic water for further study.

8. The results of treatment may to some extent be judged. Changes in the character of the evacuations are best appreciated when these are subjected to this system of analysis. Pills or tabloids may be seen which have passed through unaltered and unused.

THE CURATIVE VALUE OF LUSTIG'S SERUM.

THE report to the Bombay Municipal Committee on the curative value of anti-plague serum, prepared after the method of Professor Lustig of Florence, is a very interesting document. According to this report the use of a curative serum in plague cases has a great future before it. For the preparation of the serum horses are used; it takes three or four months for the efficient immunisation of a horse. Five or six litres of blood can be drawn from each horse, and this can be repeated three or four times only, giving in all about ten litres of serum, which it is stated is sufficient for one hundred patients.

Dr. Polverini reports on the use of this serum in 475 cases treated at four plague hospitals in Bombay, and including thirty-two cases treated in private practice. The mortality of these cases was distinctly less than that of cases treated by ordinary methods, indeed the recovery percentage was thirty-nine. This is satisfactorily compared with a recovery rate of only nineteen or twenty per cent. in four other hospitals in Bombay, that is to say, the recovery rate under the use of Lustig's serum was practically twice as great as under any other treatment except indeed that by atropine which, we learn from a paper by Dr. R. Row, of Bombay, has given in 466 cases a recovery rate of 34 per cent.

Dr. Polverini maintains that the necessary selection of his cases in no way helped to make his results more favourable. It is stated that the serum acts best in uncomplicated cases of bubonic plague, it is of no use in pneumonic cases, which indeed are seldom seen in time for any treatment to be of avail.

The following summary is given of the facts relating to the efficacy of this serum:—(1) a

fall in temperature; (2) increase in the arterial pressure; (3) mitigation of the nervous symptoms; (4) lessening of the tenderness of the bubo; (5) diminution in the size of the bubo; (6) more frequent reabsorption of the bubo. Dr. Polverini concludes his report by stating that an increase in the recovery rate by some twenty to fifty per cent. may be confidently hoped for from the use of this serum.

THE SOUTH AFRICAN TYPE OF TYPHOID FEVER.

THE following extract from a note by a war correspondent of the *British Medical Journal* is interesting, as showing how the type of typhoid fever in South Africa resembles that seen in India, more than the European type:—

"Typhoid fever here differs materially from the form usual in England, and approximates more nearly to the Indian type. The classical textbook typhoid is hardly ever seen here, and diagnosis, especially in the early stages, is very difficult. A practitioner of very large experience assures me that he does not see a rash in more than one out of five or six cases in civil practice, although, as I mentioned last week, the medical officer in charge of the enteric wards at Woodstock sees a larger proportion amongst the soldiers. This is interesting, as it may be due to the type being an imported one. Then, again, it is extremely rare to find the temperature chart typical. The temperature hardly ever goes either up or down in the orthodox manner, and defervescence is very irregular, and marked by a much closer approximation of the morning and evening register than is usual in Europe. Marked diarrhoea, again, is less frequent, and the characteristic tongue is seldom met with. Diarrhoea, when it is present, often appears only at a late period, perhaps for the first time in the third or even the fourth week, and gurgling and abdominal tenderness are frequently absent. Indeed, it may be said that a large number of enteric cases present nothing but pyrexia and the conditions which accompany any pyrexia. And yet many of these simple pyrexial cases are fatal, presenting typical lesions at the necropsy. The writer saw many such during the Kaffir and Zulu wars, when the disease was extremely rife. The fever is very often extremely prolonged, without any complications, and assumes very often an intermittent type. Cardiac failure is a frequent cause of death, and most experienced practitioners guard against it very carefully from the beginning. One cannot help thinking that there is something in the typho-malarial theory after all."

One need not subscribe to the last sentence of this extract. The question of typho-malaria has surely been settled. It is nothing more than a combined infection of malaria and enteric, just as an extract in our Current Literature columns last month showed that yellow fever

and malaria might be, often are, combined in the same patient, but there is no necessity to label such a combination "ictero-malaria."

AMERICAN WORK ON THE MOSQUITO MALARIA THEORY.

WE have received an interesting reprint of an article in the *Journal of The American Medical Association*, it is a preliminary investigation of the theory of the inoculation of malarial fever through the agency of mosquitos, by Dr. Albert Woldert of Philadelphia. He gives an account of his researches into the distribution of mosquitos in America. In Texas, Pennsylvania and New Jersey the most common mosquito is the culex pungens. The anopheles claviger appears to be somewhat rare in the States, though Loew in 1863 described in North America, but our author says it must be rare, and there is no specimen of it in several museums in the States. Other species of anopheles are however common, e.g., anopheles quadrimaculatus, and A. punctipennis; these have been found in at least eight or nine districts in the States, besides these two the anopheles crucidus and A. ferruginosus have also been found. Dr. Woldert recommends a mixture of dry sherry and brown sugar for feeding mosquitos it is desired to keep alive for purpose of experiment. The article then goes on to give an excellent account of the anatomy of these insects and of the best method of dissecting them. The first accurate description of the veneno-salivary glands of the mosquito is attributed to Professor Macloskie of Princeton University.

Another article on this subject appeared in the *New York Medical Record* (December 23rd, 1899) by Dr. W. N. Berkeley.

MOSQUITOS WANTED.

WE are asked to state that Major G. M. Giles, F.R.C.S., I.M.S., will be much obliged if medical men will send him mosquitos from any part of India and Burma. He will also be glad to identify mosquitos for any one who sends them to him in good condition. It is requested that great care be taken in catching and handling the mosquitos. They may be caught either in a glass bottomed pillbox or in a widemouthed bottle with a glass funnel, the stem of the funnel should have a bore of not less than half an inch. Flying mosquitos may be caught with a very light butterfly net of fine silk gauze. When thus caught do not attempt to handle the living insect, but kill it by puffing cigarette smoke into the net. For sending mosquitos by post it is better to pin them, if one knows how to do it properly, if not the best plan is to put them in short pieces of glass tubing, just wide enough to

contain them without having to forcibly push them in or out, or they may be sent packed singly in very small pillboxes.

As Major Giles is now acting as Sanitary Commissioner, N.-W.P. & Oudh, his present address is Naini Tal, and afterwards at Lucknow.

AN OLD DESCRIPTION OF SCLEROTISING GRANULOMA.

MR. ARTHUR POWELL sends us the following extract, which he considers is probably an early description of the affection now known as "sclerotising granuloma."

"Churchill, in his *Disease of Women*, 5th edition, published in 1864, describes an "Oozing Tumour of the Labia" (first described by Sir C. M. Clarke) as a tumour arising from the labia and bridging over the mons veneris. On examination, we find the labium enlarged by this flat kind of tumour, its texture is firm, and it is lobulated or divided by fissures, its colour may be that of the surrounding tissues or somewhat darker. It is not oedematous though the neighbouring parts sometimes become so, and it is seldom raised more than from one-eighth to one-third of an inch above the level of the skin.

From its surface and especially from its intertices a pellucid watery fluid is distilled with considerable rapidity, varying according to the constitution of the patient and the weather. The tumour gives a firm feel to the touch and is not very sensitive. . . . it is probably the result of low chronic inflammation, and is certainly not cancerous."

Churchill recommended excision.

THE CLASSIFICATION OF DEATHS FROM DIARRHOEA.

The Committee appointed by the Royal College of Surgeons in response to a representation made by the Incorporated Society of Medical Officers of Health has issued its report. They state that many different terms are employed to designate the disease officially known as "epidemic diarrhoea," whereby its specific character is in danger of being ignored and great confusion results. Dr. Tatham pointed out that a large variety of unsatisfactory and unauthorised terms have been used so extensively as to vitiate entirely the diarrhoea mortality returns for the past ten or fifteen years. The Committee finds that there is a widespread objection on the part of medical practitioners to the employment of the term "diarrhoea" in certifying the cause of death. By the public the term "diarrhoea" is generally held to imply a mild disease, insufficient to cause death. This fact explains the reluctance of the practitioner to employ it on a death certificate, since it may be conceived to imply a stigma on his own capacity. In order, therefore, to substitute for it a term equally accurate,

which will convey to the public the idea of a more serious affection and at the same time to retain the idea of being specific, the Committee recommends the College to authorise the use of the term "epidemic enteritis" or if preferred "zymotic enteritis" as a synonym for "epidemic diarrhoea" of the nomenclature, and they further recommend that the College should urge the entire disuse of such terms as "gastro-enteritis," "muco-enteritis," or "gastric catarrh."

WIND-BORNE ENTERIC FEVER.

The following extract from the Annual Report of the Army Medical Department for 1898 is interesting:—

"The epidemic at Quetta is ascribed to dust-borne germs and the agency of flies on the following reasons:—(1) Immunity from the disease until the month of May, when the usual dust-storms began; (2) meteorological records show that dust-storms were very prevalent in first half of May; (3) outbreak was preceded by an epidemic of sorethroat, possibly from contaminated dust, several cases of enteric began with sorethroat. (4) The filth-pits are situated to the wind-ward of barracks, and the epidemic was severest in the lines nearest these filth-pits. Clouds of dust and swarms of flies from the filth-pits were probable causes of the epidemic . . ." Major Davies, R.A.M.C., in his special report, writes: "I feel convinced that this has been the principal channel, and that the main source of the poison was the filth-trenches, though latrines, Native and European, may have been concerned as well. . ." In the Khyber epidemic the disease began to increase in June, when the prevailing conditions were heat, dust-storms and flies. That aerial infection was responsible seems to be borne out by the facts that, at first, the disposal of the nightsoil was faulty, and that the epidemic began to cease at the end of July, almost abruptly, when arrangements were completed for the removal of excreta to a site 1½ miles distant from the camp, and when galvanized iron tanks were used for the drinking water.

The admission rate for enteric fever for officers in the army of India in 1898 was no less than 40 per mille, as opposed to 34 per mille in the previous year. Out of 1,857 officers there were 76 cases of enteric. This rate, 40 per mille, is much higher than the rate for non-commissioned officers and men. It certainly does not lend any support to the commonly received opinion that the men contract enteric from drinking the inferior water in the bazaars, for, in spite of their opportunities for infection in the bazaar, the enteric rate for the men is considerably below the rate for officers.

MAJOR J. A. CUNNINGHAM, I.M.S., Civil Surgeon of Delhi, has an interesting criticism in the

Lancet (March 31st) on operations for the removal of stone. He strongly advocates litholapaxy as does every surgeon of experience in India. "I hold," he writes, "that to subject a patient with a stone in his bladder, if uncomplicated, to a cutting operation, and particularly to suprapubic lithotomy, is retrograde surgery, and might reasonably be condemned in stronger terms."

With this we agree, but it must be remembered that the average operating surgeon in England has not the experience necessary to do the litholapaxy in a few minutes, and to him it is probably easier, if not safer for the patient, to do the cutting operations. It is all a question of experience, and in this matter operating surgeons in India have a great advantage.

WHILE measles, though common enough among the native population of India, is never a disease here of much importance, it is interesting to learn from an Egyptian Sanitary Report that measles is the most fatal infectious disease of childhood in Egypt. In fact, the increased mortality for young children in Egypt is to be entirely ascribed to the ravages of measles. Gastro-intestinal affections, diphtheria and whooping-cough are far below measles in importance and fatality. Nor is this pre-eminence of measles confined to Egypt, it is even worse in Algeria.

While this is the case for measles we find that scarlatina is very rare both in Egypt and in Algeria. Every year cases are imported, the attacks are always mild, and the disease never gains a foothold. It is said that in Budapest Koeroesi has found an antagonism between measles and scarlet fever.

TWO cases of Malta fever were reported in India in 1898 among the European troops. One man had suffered from the disease in Malta, and in the other case the patient had recently arrived from Gibraltar.

THE Pasteur Institute is at last an accomplished fact at Kasauli. Major D. Semple, R.A.M.C., a very capable officer, will be in charge. It is expected to be in full working order by 1st July next. The house which has been taken is being adapted for a laboratory, dozens of rabbits have been received, and a brain is being sent out from the Pasteur Institute at Paris.

The Government of India have been generous in the matter, and there will be an assured income of Rs. 1,000 a month, part of this is provided by the interest on the sums collected for the institute, and the (large) balance is being made up by the Government of India. As the institute will be open for the use of the general public as well as for the Army, it is to be hoped

that once it has begun work the public will subscribe liberally to place its finances on a sound footing. This is the first step towards the realisation of the scheme for Bacteriological Institutes in every Province of India,—*quod bonum felix faustumque sit.*

We are glad to learn that no time is being lost in the Plague Research Laboratory, Bombay, in setting to work on the problem of the standardisation of the Haffkine prophylactic, as so strongly urged by the Plague Commission. Captain Lamb, I.M.S., is at work on this point. Moreover since the Laboratory has got to its new premises at Parel, there have been tested no less than 530 brews or 160,000 doses, and all were found sterile.

WE have received more than one letter, complaining of the practice, which still exists in some Dufferin hospitals, of treating ovarian tumours by tapping. In these days of successful abdominal surgery surely this harmful practice should be given up, and the case sent, if necessary, to the civil surgeon for operation.

DR. MANSON's experiments on the artificial production of malaria will be followed with great interest. There is some talk of these experiments being repeated in India.

THERE appears to be a desire among writers in England on the mosquito-theory of malaria to abolish the word "mosquito" and to substitute the word "gnat." It is even proposed to abolish the term "malaria" and "paludism" and to substitute the impossible term "*haemamæbiasis*" or "gnat-fever." We may admit the term "malaria" is founded on an obsolete pathology, but if we begin thus where are we to stop; why not then abolish "tubercle," "cirrhosis" and a thousand other philologically and pathologically incorrect terms? As for "gnat-fever" why not "mosquito-fever," if a new phrase is wanted. The word mosquito connotes the tropics, and outside the tropics we are not much concerned with the malarial fevers.

FROM 1st September 1898 to end of March 1900 there have been 178,718 persons inoculated against plague in Bombay city alone. The vast majority of these are Hindoos. We note that only 345 Europeans and 218 Eurasians have been entered as inoculated.

THE March number of the *Annals of the Pasteur Institute* gives the statistics of the Institute at Algiers for about four years ending December 1898. In this period there have been 1,836 rabid bites, of all animals, treated, with a percentage mortality of only 0·49.

WE invite the attention of our readers to the extract in our special senses column on the treatment of nightblindness by feeding on liver. We agree with Major Maynard, I.M.S., that, as nightblindness is very common in India, trial of this simple treatment might easily be made, and its value readily determined.

The new volume of the *Medical Annual* contains a large number of articles on diseases of the Tropics. Among the best are (1) an excellent account of Mycetoma by Lt.-Col. W. K. Hatch, I.M.S., with 10 illustrations, several of which are coloured and (2) Major Ronald Ross' resumé of the Malarial question.

Reviews.

General Physiology: an Outline of the Science of Life. By MAX VERWORN, M.D., PH.D. Translated by FREDERIC S. LEE, PH.D. Macmillan & Co., London and New York. Price 15s.

IN the *Lancet's Annus Medicus*, 1899, this book is rightly given the highest place among works on physiology. It is of its kind the best we have ever read, and no student of physiology should or can afford to leave it unread. What Virchow did for the pathology of the cell, the unit of life, Professor Max Verworn has done for cellular physiology. From a literary point of view the translation deserves great praise, and if the original, regarded merely as literature, is as good as the translation, it is very good indeed. As the author remarks it appears more and more clear that the general problems of life are cell problems :—"the elementary constituent of all living substance, and the substratum of all elementary vital phenomena is the cell. Hence if the task of physiology lies in the explanation of vital phenomena, it is evident that general physiology can be only cell-physiology." After discussing briefly the methods of physiological research the author gives us some twenty pages of well written and most interesting history of physiological research from its earliest times with its curious attempts to explain vital phenomena by the doctrine of the *pneuma* afterwards divided into two sections by Erasistratus, viz., *the vital spirits* in the heart and *the animal spirits* in the brain. From this state of things in 280 B.C. the doctrine underwent expansion, but it was not until the genius of Galen called for attention that any distinctive change occurred. "Galen said that practical medicine could not thrive unless it were based upon a very detailed knowledge of the normal vital phenomena of the body." Thus about 131 to 200 A.D., Galen began the serious examination of the body and showed

the value of comparison by dissecting the bodies of animals, especially pigs and monkeys. His views continued to represent the physiological code for some thirteen hundred years to be modified or displaced as the result of Harvey's experiments. Perhaps the most important period was that of Johannes Müller 1801-1858, since in his time science became a truth, and the modern methods swept away the guesses of previous ages, leaving all future matters to stand or fall by the test of research and experiment, fact and knowledge replacing fancy and belief. But this book is not only valuable for the facts it contains in vast array, but because it makes the reader think and brings him face to face with the deepest and most serious problems of life. The author regards the only consistent standpoint to be *monism*, which seeks to derive all phenomena from a single cause. His philosophy is that of the Berkeley order, that of ideas. There is little to be gained by combating any view so long as facts and fair deductions are admitted. A brick is none the less hard because it is merely one of our ideas. A careful study of the nature of living substance brings us up to Chapter III commencing the study of the elementary vital phenomena, which are taken in order; ingestion, etc., including the nature and value of food-stuffs and the phenomena of metabolism. The section treating of form-changes is most interesting, and the two series of form-changes are discussed ; first, the *phylogenetic* or racial development, then the *ontogenetic* or *germinal* development. The question of the possibility of inheritance of acquired characteristics is fully argued and left, as it must be, failing satisfactory experiments, undecided, though for our part, we are strongly of opinion that true mutilations will never become hereditary since they in no way affect the germinal elements nor the course of development. This review is already long enough, but we must draw attention to the very attractive and fairly written section of the origin of life on the earth with the very ingenious theory of Pflüger which suggests *cyanogen* as the link between the lifeless and the living. "When we think of the beginning of organic life we must not think primarily of carbonic acid and ammonia, for they are the end of life, not the beginning." "The beginning of life lies rather in *cyanogen*." The action of stimuli and the mechanism of life brings us to the end of the valuable 586 pages of which the work is composed.

Lessons in Elementary Physiology. — By THOMAS H. HUXLEY, LL.D., F.R.S. Enlarged and revised edition. London, 1900. MACMILLAN & CO.

THIS well-known manual on elementary physiology by the late Professor Huxley is now brought out, enlarged and revised by Sir Michael Foster and Dr. Lea. Although this is called the fifth edition, the little volume has been reprinted

over 30 times, proof in itself of its high excellence. In the present edition Sir Michael Foster says that though considerable changes and additions have been necessary, yet a pious feeling has led us to preserve as far as possible the original author's own form of exposition and his own words. The present volume will be found very complete, and no better manual on physiology could be placed in the hands of medical students in India.

Nordrach at Home : the Hygienic Treatment of Consumption. By DR. J. J. S. LUCAS. Bristol : J. W. ARROW SMITH, 1900. Price 1s.

THE object of this little book is to explain how the principles of the "open air" treatment of consumption may be adopted to home life in England. The author does not mean to imply that the details of this treatment can be as successfully applied in private houses as in a well-managed sanitarium, but he believes that there are cases in which the following out of a few simple directions may be the means of arresting and preventing the ravages of phthisis. The little book will be found very useful, and is one which might be placed in the hands of a patient, on whom the physician is endeavouring to impress the details of the latest method of treating consumption.

The Hygiene of Transmissible Diseases—
By A. C. ABBOTT, M.D., Professor of Hygiene, University of Pennsylvania. Philadelphia : W. B. SAUNDERS, 1899.

THIS is an excellent volume, dealing with one of the most important sections of hygiene, *viz.*, the preventable specific diseases. After some fifty pages on the causation of disease, its predisposing and exciting cause, the volume goes on to a consideration of the individual diseases. In discussing the question of the influence of race some very interesting remarks are made upon the well-known immunity of the Jewish race from certain diseases, *viz.*, tuberculosis and acute epidemic affections generally. It is also pointed out that while Negroes (in America) are comparatively immune to malaria, they are exceptionally susceptible to Asiatic cholera. In New York city Negroes are most liable to tubercle, pneumonia, puerperal and urinary diseases, and much less so to scarlet fever, diphtheria and bowel complaints. It is noted that in the United States both typhoid fever and malaria prevail most from July to November. On page 65 a graphic chart is given showing that in "cities with good sewers" the death-rate for typhoid was on the average 2·4 per 10,000, contrasted with "cities without sewers or imperfectly sewer'd" in which the death-rate per myriad was on the average 10. Another chart shows graphically the decline in typhoid, deaths before and after the introduction of sewerage and water-supply in a large number of

European and American cities. There is also given a critical analysis of several well-known outbreaks of typhoid and their connection with a faulty water-supply is clearly traced. There is not much of special interest in the chapter on cholera. The influence of Councilman and Lafleur is very evident in the short chapter on "amoebic or tropical dysentery." It is said that "the amœbæ are suspected to be more or less constantly present in the marsh waters of many tropical places." It is remarkable how the discovery of the amœbæ seems to satisfy many writers, the fact that amœbæ are found in the dysentery of temperate climates is ignored by those who want to make out one special type of "tropical dysentery." In the chapter on "cerebro-spinal fever" it is held that the *diplococcus intracellularis* of Weichselbaum is the specific cause of the epidemic disease, but it is pointed out that sporadic cases of typical meningitis may be encountered which are caused by the streptococcus pyogenes, the pneumococcus, &c., but it is said that these types show no tendency to occur in the form of widespread epidemics. The old mistake of Hirsch is repeated that cerebro-spinal fever is unknown in the tropics! In the chapter on plague, it is said that the disease "has never been known to cross the plains of India;" but this chapter is behind the times and is apparently based upon the reports of the Hongkong epidemic of 1894.

We need not linger over the other chapters in this book, but would call attention to section III, which deals with general prophylaxis, which is well written, and up to date.

On the whole, the volume is a good one, it contains little that is new, but forms an admirable handbook on the subject for students. It is beautifully printed and altogether well turned out by the publisher.

Current Literature.

MEDICINE.

Sprue.—By Sir Lauder Brunton, M.D. (*Edinburgh Medical Journal*, February, 1900).—In a clinical lecture Sir Lauder Brunton demonstrates the identity of "Ceylon sore mouth," or true sprue, and the "hill diarrhoea" of India. It is only in the initial stages that the differences are apparently marked; but eventually the same pathological conditions obtain in both, *viz.*, denudation of the epithelium of the tongue, oesophagus and the ileum, atrophic changes in the ileum, and changes in the pancreas, including disintegration of the secreting cells and a great increase in fibrous tissue.

In early sprue the mouth is very sore, tongue tender, the anus frequently sore also, though the diarrhoea may not be prominent. On the other hand, in Indian hill diarrhoea, the stress is on the flux not on the mouth. Later on the diarrhoea becomes more urgent in Ceylon sore mouth, and the tongue and anus may become affected in the Indian variety. In both the

nature of the motions is much the same,—the stools are liquid, white and frothy, and frequently offensive in odour. The frothiness indicates fermentation, the whiteness is due to the presence of undigested fat,—not to the absence of bile as was commonly supposed. There may be complete absence of bile without any diarrhoea. The stools may be colourless in appearance, while the bile pigment is present in an unaltered form.

In both Indian hill diarrhoea and Ceylon sore mouth the treatment is the same,—milk, nothing but milk, and plenty of milk. Medicinally Sir Lauder Brunton recommends a prescription that he learnt from the late Lieutenant-Colonel McConnell of Calcutta, *viz.* :—

| | | | |
|----|-------------------|---------------------|-----------------|
| R. | Bismuth carb. | ... grs. | x |
| | Sodii bicarb. | ... grs. | x |
| | Tr. cannabis ind. | ... m. | v |
| | Mucil. tragacanth | ... $\frac{3}{4}$ i | |
| | Aq. cinnamomi | ... ad | $\frac{3}{4}$ i |

Congenital Stenosis of the Pylorus.—By J. H. Nicoll, M.B., C.M. (*The Glasgow Medical Journal*, April, 1900.)—Congenital stenosis of the pylorus bears a strong superficial resemblance to infantile marasmus produced by various forms of gastric or intestinal disturbance. The condition was first brought prominently to notice in 1841 and 1842, and then appears to have been lost sight of until 1888, since when cases have been recorded from time to time.

The symptoms may be present at birth, or may manifest themselves later, according to the amount of stenosis present. Vomiting is apparently without cause, is not accompanied by other dyspeptic symptoms, and is ultimately persistent. The reaction of the vomited matter may be normal, acidity may be increased or diminished. The vomiting may occur soon after, or long after a meal, or only after several meals. Milk may be rejected unaltered, clotted, or with evidence of fermentation. Constipation is a constant feature. Emaciation is progressive, and ultimately extreme. In the early stages there may be no physical signs; later, when emaciation is marked, a variety of symptoms are observable, e.g., peristaltic gastric waves, dilatation alternating with spastic contraction, continuous dilatation, and pyloric tumour. The last has been found in only very few cases. As a rule the cases prove fatal, unless recourse is had to surgical intervention, as in the successful case recorded in this paper.

Lymphadenoma.—By Jonathan Hutchinson, F.R.S. (*The Polyclinic, London*, March, 1900.)—Mr. Hutchinson deprecates too great precision in the nomenclature of infective diseases of the lymphatic glands. It cramps our conceptions of disease and leads to error. He argues in favour of "species."

"As regards gout and rheumatism, I have often ventured to use the comparison of the mixing of spirits and water. Our tumbler may contain a great deal of water and very little whisky, or on the other hand, the quantity of spirit may be liberal. Let the water represent rheumatism and the whisky gout, and it will not be difficult to realise that between the weakest and the strongest there may be all gradations."

So it is with diseases of the lymphatic glands. There is the group of strumous, scrofulous, or tuberculous glands. Then, again, there are lymphadenoma, lympho-sarcoma, and some others. But these conditions are not wholly and essentially distinct, they may occur together, and in this conjunction they would modify each other. Consequently it is a matter of degree, according as the tubercular or the malignant process has the upper hand, and there are infinite gradations between lympho-sarcoma and suppurative scrofulous disease. Moreover the disease may begin in the one form and end in the other. "The greater the tendency to suppuration, the nearer the relationship to tuberculosis. The slower and the more quiet the growth and the greater the freedom from inflammatory action, the more closely does the case conform to the type of lymphadenoma. The more rapid the growth

and the closer probably is the relationship to 'sarcoma,' but this name must always be regarded as nothing more than equivalent for tendency to develop in a 'malignant' manner."

D. M. MOIR.

SPECIAL SENSES.

DONALD GUNN discusses **Lachrymal Obstruction in the Young** in the *Ophthalmic Review* for February 1900.—Embryological and clinical observations have convinced him that dacryocystitis and lachrymal abscess in the new born, where not due to some general disease such as tubercle or syphilis, are the result of an intra-uterine dilatation of the lachrymal sac, of a mucocele in fact, and that suppuration only occurs in this when the child is exposed to the outer world and pyogenic organisms obtain admission to the collected material. The mucocele is brought about during foetal life by an obstruction at the lower end of the duct. The mucous lining of the nose—derived from the surface epiblast—is the last structure to be perforated by the extension of the lumen of the lachrymal duct, and obstruction in many cases may result from a persistence of the mucus membrane at this point. Possibly the cartilages may be at fault, those which persist growing abnormally or those that usually disappear persisting. The fact that the margins of the eyelids are cemented together till shortly before birth does not do away with the possibility of tears passing from the conjunctival sac into the lachrymal passage, for the puncta being inclined backwards, they are free to work even when the lids are closed as in sleep. As however the eyes are completely protected from external stimuli, the secretion of tears, if it takes place at all, is very slight. During late foetal life all mucous surfaces secrete a certain amount of fluid and shed their epithelial waste (*cf.* meconium, &c.). Such products form sufficient material for the distension of the duct, given an obstruction, even in the absence of tears. Mr. Gunn relates the eighteen cases he has met with at the Great Ormond Street Children's and Westminster Ophthalmic Hospitals bearing out the observations epitomized above.

The same number of the *Ophthalmic Review* contains an abstract of a paper by Trantas, of Constantinople, in the *Recueil d'Ophthalmologie*, 1899, on **The Treatment of Night-Blindness by the Ingestion of Liver**, a method of treatment dating back to Hippocrates who treated this affection by making the patient eat large quantities of raw ox-liver mixed with honey. Galeyowski and others have found it of no use. Trantas had a patient, a peasant, aged 25, who had long had severe malarial fever and an extreme severe attack of jaundice two years previously. The night-blindness came on two months after the jaundice set in, lasted two months, and had only disappeared after a series of "liver fumigations" suggested by some old woman. Trantas says he did not hear of this Sybil's advice until after he had recommended a similar line of treatment. The night-blindness recurred, and when seen the patient had had distinct failure of vision during the day as well for three months. There was jaundice and fever, and the liver and spleen were enormously enlarged. There had been diarrhoea for months and frequent haemorrhages from the gums. V.=R. counts fingers 3 metres, 5 metres on a very bright day. L counts fingers 1*1/2*m. in daylight. At night he could not see stars, and in a 'dark' room could only count fingers at 8" by feeble lamp light with the right, and with the left eye he could not distinguish whether a candle was lighted or not. In both eyes the field of vision was reduced to half in all directions and colour-perception was very imperfect. There was much sclerosis 'en plaques' of the conjunctiva chiefly where exposed to the air, and the cornea were ground glass-like. There were iritic deposits on the lenses. The right disc was very pale and atrophic and the vessels pulsated, the left could not be seen. Trantas, other treatment having

failed, administered liver to the amount of 200 grammes daily, besides twice a day 'fumigating'; how this was done is not stated. Improvement was immediate, vision being better next day and the corneal opacity became less dense. Even so soon as a week after the commencement of the liver treatment the field of vision was enlarged, central vision had risen to $\frac{1}{4}$, the sensibility of the cornea, which had been dulled, was returning, the pulsation of the fundal vessels was no longer to be made out, the xerosis of the conjunctiva was gone, and at the same time the patient's general condition was much improved as was shewn by his better hand grip, and his diarrhoea had ceased. In fact after the liver treatment had been kept up for a little over three weeks, the patient left hospital cured of his night-blindness and his kerato-malacia; there was an improvement even in the colour of his optic disc. Three other cases, not malarial, are recorded, with good results. In an epidemic of night-blindness accompanied by a contagious follicular conjunctivitis, among the children of an orphan asylum, Trantas cured the cases by liver treatment only without the employment of any other remedy. A case is certainly made out in this paper for a more extensive trial of the method, and in India where night-blindness is so common its value might well be tested and proved or disproved.

Holocain.—Professor J. Hirschberg states in the June 1899 number of the *Centralblatt für Praktische Augenheilkunde* that he has used this drug in several hundreds of major and minor eye operations since January 1897, without a single evil effect. It is preferable to cocaine. It is used in a 1 per cent. solution. In simple cataract extraction there is no difference between them, but with iridectomy holocain gives better results than cocaine. It shows to advantage in all iridectomies, especially for glaucoma in very aged people where one willingly desists from using chloroform. In squint operations it is preferable, also in cauterisation of corneal abscesses, it makes the red and swollen conjunctiva more anaesthetic than cocaine. Only in enucleation of the globe does Dr. Hirschberg continue to use cocaine because the recorded greater toxicity of holocain has prevented him from injecting it subconjunctivally. He sterilises his flasks containing the holocain solution for ten minutes before use. The solution remained clear except once when dust-like opacities formed in it. On returning the flasks to Dr. Tatiber, the discoverer of holocain, the latter wrote and informed Dr. Hirschberg that the fault lay in the glass. Pansier in the *Annales d'Oculistique*, October 1899 (O. R. February 1900), brings forward a method of obtaining a **conjunctival flap in cataract extractions** designed to combine the advantages of simple suture and Rahmer's plan of drawing the conjunctiva over the whole cornea in the form of a purse. Pansier proceeds somewhat upon the lines which guide some surgeons in the performance of sclerotomy: he makes an incision after the manner of Fuchs in the corneo-scleral junction, but on coming near the summit, so that there are only left some 5 or 6 mm. of intact cornea in front of the knife, he ceases to cut forwards, and turning the edge of the knife backwards, so that the blade lies upon the sclerotic, cuts under the conjunctiva for some distance; he then withdraws the knife *without cutting across* the bridge of conjunctiva thus mapped out. This incision then leaves an undivided bridge of conjunctiva adherent at one extremity to the conjunctiva of the upper portion of the globe, and at the other to the summit of the corneal flap. The disadvantages of the method appear to be some difficulty in the exit of the nucleus, and still more in the removal of cortex, and the fact that troublesome haemorrhage may occur on the other hand it gives immediate and perfect opposition of the lips of the wound and consequent rapid healing. Even as regards the disadvantages, any difficulty in extracting the lens may be overcome if necessary by dividing the bridge and converting it into the simple flap operation.

F. P. MAYNARD, M.B., D.P.H.

SURGERY.

Report on "Henpuye" in the Gold Coast Colony.—Albert J. Chalmers, M.D., Vict., F.R.C.S., Eng. (*The Lancet*, January 6th, 1900).—To those who do not see *The Lancet* regularly an extract from this paper will be of no little interest for the disease known as "Henpuye" or "dog nose" is rare and interesting. The disease occurs in Gold Coast Colony, parts of its Hinterland, and on the French Ivory Coast where it is called "goundu" or "anakhre." "Henpuye" generally follows an attack of "yaws" in which the nasal mucous membrane has been attacked. A small, generally symmetrical, bony swelling appears on either side of the nose. It is attached to the nasal bones and is generally oval with the long axis directed downwards and outwards. In advanced cases the nasal process of the superior maxilla and the maxilla itself are implicated. The growth consists of new bone deposited under the periosteum. It grows slowly in all directions but does not enter the nasal, orbital or buccal cavities. The symptoms are pain with the presence of a sore in the nose at the commencement of the disease, later headache. The growth interferes with sight by growing in front of the eyes and even hiding them. The skin over the tumour is normal and freely moveable. The course of the disease is that the swellings may cease to grow at any period of their existence or may continue to grow for years. They do not, so far as the author's experience goes, break down or ulcerate. The disease appears to be more common in men than in women. Cases are described and drawings given. The only treatment is removal. The periosteum strips off readily, and under this is a thin shell of compact bone somewhat ridged on the side towards the periosteum. The rest of the tumour consists of cancellous bone. As regards etiology the disease is probably due to the absorption of the poison of 'yaws' from the nasal mucous membrane. The disease occurs also in the West Indies. It would be interesting to know if it has ever been seen in Assam as a sequel to "yaws."

Surgical Hints.—(*International Journal of Surgery*).—The following useful hints are quoted from *The Medical Review* for December 1899:—(1) Never allow a room to be swept or dusted just before an operation. Cover everything with wet sheets if necessary, so as to prevent the raising of dust. (2) When you have blood on your hands first wash them in pure water; soapy water does not dissolve blood readily. Clear water and a nail brush should come first, soap next. (3) In all amputations, remember that the loose muscles retract more than those attached to the bone. It is better to sever the loose muscles first, and the attached ones next, so that the ends may be of equal lengths. (4) If you believe that the operation has been a clean one, leave the wound alone, if not an infected one. The best surgeons usually apply but one dressing, the first. When this is removed the stitches are taken out and the wound only needs a clean covering for a few days. (5) Before giving ether to patients suffering from catarrh of the nasal passages, wash these out with an alkaline solution. This will, by removing the secretions, facilitate breathing, and hence increase the facility with which anaesthesia can be induced. (6) Scalp wounds should always be stitched if of any size. But always remove the stitches early; otherwise they may act as setons and lead to suppuration, which, if it reaches the loose layer under the aponeurosis, is likely to be serious. These wounds only gape if the scalp muscle or its aponeurosis is incised; very few stitches are needed.

Substitute for Poultices.—Dr. M. J. Wilbert (*American Journal of Pharmacy* quoted in *The Medical Review*, December 1899).—Kaolin, 1,000; glycerin, 1,000; boric acid, 100; oils of peppermint and wintergreen, each 1; oil of eucalyptus, 2. Pass the kaolin through a No. 60 sieve to free it from impurities, and heat to 100° C. for an hour or more to sterilise it; then add the

glycerin and continue the heat for thirty or forty minutes, stirring the mass occasionally with a spatula, until a smooth, creamy mass is obtained. Remove the source of heat, and, when the mass is nearly cool, add the boric acid and the oils ; mix thoroughly, and preserve in tin or glass boxes, which are sufficiently tight to prevent the absorption of moisture from the atmosphere. Similar preparations have been sold in America under the names "Antiphlogistine" and "Antithermaline."

[One of the best materials for a poultice in this country is the leaves of the *neem* tree. They are always available and any quantity of leaves can be kept boiling. The required amount for each poultice is taken out of the pot as required and slightly bruised.]

Bezoar Calculus.—(*Medical Press and Circular*, November 15th, 1899). At the Gesellschaft der Aerzte, Preindelsbergers, Professor Shopf showed a bezoar stone of crinular origin taken from a young girl, twelve years old. On entering the stomach and draining off the fluid a longitudinal concretion was found with a tail extending down the duodenum 30 centimetres (11 8 ins.) in length. The hair of the stone had a bright red colour with projecting black hair ; the former from the female head, and the black resembling horse hair. When dried the stone weighed 160 grammes or nearly six ounces.

The symptoms before the operation were vomiting, emaciation, and general malaise.

The diagnosis was a movable tumour easily felt through the walls of the abdomen, but whether it was a new growth or floating spleen could not be determined.

Bezoar are very rare in man, although they are frequently found in horse, cattle, sheep, chamois, and camel. In man they are usually met with in hysterical or mental imbeciles. They can be borne for a very long period without danger to life, ranging from six to twenty years. Inanition is the usual mode of exit.

The diagnosis of such cases is usually obscure, although the history in some cases will easily decide the correct state, such as the habit of chewing or biting the hair of the head or beard. As a rule, however, they are usually confounded with floating kidney or spleen, cancer of the stomach, or a faecal impaction in the transverse colon.

The therapy points to early gastrostomy. An interesting point in these bezoars is the growth of fungi peculiar to themselves (*Schwarzwurzel*).

The Management of Surgical Injuries to the Ureters.—By Beverley MacMonagle, M.D. (*American Journal of the Medical Sciences*, December 1899).—The surgical work on the ureters in man was preceded by a number of successful operations on dogs, and excellent results have followed in the case of injuries to the human ureter. Many operations have been devised which may be arranged as follows :—
 (1) Invagination of the proximal into the distal end.
 (2) Tranverse end-to-end anastomosis.
 (3) End-to-side anastomosis (Van Hook).
 (4) Oblique end-to-end anastomosis (Bovée).
 (5) Implantation into the bladder.
 (6) Implantation into the bowel. (See original paper in the *Transactions of the American Gynaecological Society*, Vol. XXIV, 1899).
 (7) Crossed anastomosis, i.e., switching the ureter into its hollow of the opposite side. A brief description of each method and some illustrative cases are given. The writer strongly recommends that when extensive abdominal operations are about to be performed bougies be passed into the ureters as a means of locating them and preventing injuries such as not infrequently occur and call for the above-noted remedial measures. Most of these injuries have been due to the displacement of the ureters by a tumour or tumours arising deep in the pelvis and pushing the broad ligament apart, or to carcinoma involving the broad ligament. In such cases, therefore, efforts must be made to locate the ureters and carry them out of the way before tying and cutting the tissues for removal. Wounds of the ureter can be sutured and the peritoneum stitched carefully over them. Repair takes place in a satisfactory manner. Transverse end-to-end anastomosis has to its credit

seven cases with recovery so far as the ureter was concerned. Invagination of the proximal into the distal end has been uniformly successful, except in one case. Care must be taken when there is uretero-vaginal fistula to get the urine into an aseptic condition before operating.

Chrysarobin a specific for Warts.—Dr. G. M. Fitz, quoted in the *Medical Press*, November 15th, 1899. Excellent results have followed the treatment of warts with *Chrysarobin*. First pare down the wart until there is profuse bleeding and then apply a 10 % solution of *Chrysarobin*, the vehicle being either ether or ordinary gutta-percha solution.

Chromic acid or salicylic acid act much in the same way.

Excision of the Rectum and Sigmoid Flexure for Cancer.—Schuchardt's operation (*Deutsch Med. Wochenschrift* quoted from *The Medical Review*, December 1899).—Kraske's operation was a great advance, as it allowed the lymphatics involved to be thoroughly extirpated. The writer's operation with a parasacral incision, which he first employed for cancer of the uterus, allows of an equally radical removal, preserves the sacrum with the sacro-sciatic and sacro-iliac ligaments, and is much less dangerous to life. In annular cancers, when there is a difficulty in completely emptying the bowel before the operation, a left lumbar colotomy should be performed some weeks previously. The following are the steps of the typical operation : (1) An incision is carried from the posterior margin of the anus to the junction of the lower and middle thirds of the sacrum ; the coccyx is freed from its attachments and sawn off obliquely. The wound is packed with gauze. (2) The skin incision is continued forward round both sides of the anus, the orifice of which is closed by a continuous silk suture. (3) Two to three fingers' breadths on either side of the intestine thick catgut sutures are inserted deeply into the tissues large curved needles, and are firmly tightened and knotted. The tissues can then be divided with scarcely any hemorrhage if incised as near as possible to the ligatures. (4) This process is repeated as often as necessary in order to penetrate deeply enough to completely separate the rectum from its lateral muscular connections. (5) The bowel can then be detached without much difficulty from the hollow of the sacrum by pushing it forwards. Any hemorrhage during the process can be arrested by pressure. (6) The bowel is freed anteriorly last, in the male from the prostate gland and bladder, in the female from the rectovaginal septum, and this in uncomplicated cases presents no difficulties. Whenever necessary the peritoneum can be safely opened. (7) In carcinoma of the sigmoid flexure the mesentery is transfixed and ligatured with catgut, as near to the sacrum as possible, and divided. This allows the intestine to be pulled down, and the process of dividing the mesentery and bringing down the intestine is repeated until the latter is sufficiently free to allow of complete resection of the tumour and of joining what remains of the sigmoid flexure to the skin. (8) The skin incisions are closed, with the exception of a gap into which the intestine is sewn. The writer does not attempt to preserve the sphincter ani. (9) If the vagina is involved in the growth, it can be removed with the rectum by prolonging the incisions forwards on either side of the vagina (bilateral paravaginal incision). The separation of the rectum from the sacrum by blunt dissection has the advantage of removing with it all the para-sacral tissue containing the infected glands.

The Surgical Treatment of Tumours within the Spinal Canal.—Drs. Putnam and Warren. (*American Journal of Medical Science*, October 1899; *British Medical Journal*).—The writers publish three original cases of morbid growths of the spinal cord treated by surgical operation, and add to this record a table of thirty-three other cases of a like kind collected from various sources. Neither the authors' records nor the data afforded by their table leave a very favourable impression of the

results hitherto attained by surgical intervention in a large majority of the cases of spinal tumour that have been submitted to such treatment. In ten, perhaps twelve, of these cases the operation, it is stated, seems to have hastened death; in nine cases, the surgical treatment made little difference in the progress of the case. In ten cases the operative treatment is reported to have led to recovery; but in two of these cases, according to the authors, the records are not sufficiently perfect to allow of verification of the statement. The first case reported by the authors is one of a distinct and easily removable intradural fibroma in the lower part of the dorsal region. The patient, it is stated, though greatly improved after the operation, and able to walk slowly without the aid of a stick, and free from any considerable pain, is yet far from well. In the other two cases, although the disease, which was malignant, involved the cord itself, and could not be removed, operative treatment, it is asserted, was followed by relief of pain and general improvement. At the end of their paper, however, the authors state that with regard to the favourable results which followed surgical treatment in these two cases it would be hazardous to assert that they were so clearly attributable to the operation as to justify repetition of the procedure in similar cases.

The Value of the Different Methods of Bowel Union.—By Prof Chlumsky, *Centralblatt für Chirurgie (Therapeutic Gazette, October 1899)*.—The *Therapeutic Gazette* quotes Fowler's abstract (*Annals of Surgery, July 1899*) of Chlumsky's paper. The experimental work was done on dogs and human cadavers. The tests applied were those of hygrometric pressure.

In the human bowel the intact intestinal wall alongside of the anastomosis was torn earlier than the site of the anastomosis itself. Recent intestinal unions in dogs, applied in the living animal and examined at once, appeared to be less resistant than those in the bowel of the dead dog.

The firmness of the intestinal anastomosis applied in the living dog diminished continuously for the first four days. During the first twenty-four hours it diminished only moderately, unless the peritoneal inflammation due to the operation was very severe at the site of the anastomosis and its neighbourhood (100 to 200 millimetres hygrometrically); if the loops of anastomosis were markedly reddened or otherwise considerably altered, the firmness of the anastomosis diminished surprisingly after twenty-four hours (20 to 100 millimetres hygrometrically); forty-eight hours following operation, in case of slight inflammatory reaction, the resistance was still less (80 to 120 millimetres hygrometrically), and diminished still more during the next twenty-four hours. On the third and fourth twenty-four hours, the lowest resistance was regularly reached (50 to 90 millimetres hygrometrically).

On the fifth day the resistance to pressure increased (50 to 120 millimetres hygrometrically), and on the seventh day increased to the resistance of the recent anastomosis (150 to 340 millimetres hygrometrically). Twenty-four days following, the original resistance was increased (250 to 350 millimeters hygrometrically).

Ten days following operation, the intact bowel tore before the site of anastomosis gave way (height of pressure 380 to 400 millimetres hygrometrically); and on the fifteenth day in only one case did the anastomosis tear before the uninjured bowel wall. Thirty days after operation, and in one case 120 days after, the resistance of the site of anastomosis and the bowel wall was nearly equal.

At first sight it is surprising that such low pressure will tear the anastomosis between the third and fifth day. One would imagine that the solidity of the anastomosis would steadily increase. This can be readily explained. During the first two days the parts are fixed mechanically by the suture or button. The parts gradually become infiltrated and consequently less

resistant, thus offering a less secure hold for the fixing elements. Every operator knows what small resistance most tissues possess two to five days after a trauma. In the intestinal wall the conditions are similar.

Further, anastomosis by button did not differ materially from anastomosis by suture; either was torn by approximately the same amount of pressure. In case of simple mechanical traction the anastomosis by button gave way earlier, especially when the button was cast off or absorbed before the fifth day. Attention is drawn to the fact that in certain cases in which the Murphy button was used, even in cases of recent anastomosis, while the anastomosis gave way sufficiently to allow the button to show, yet no fluid escaped for some time after. This is accounted for by the integrity of the purse-string suture fastening the intestinal wall to the button.

As a general rule, however, circular anastomosis stood a higher pressure than lateral. In recent anastomosis done by suturing, the site of rupture was almost always at the point where the knot of the continuous suture lay. This was particularly so if two knots lay together. If the continuous sutures were first tied separately and then together the perforation was always at this point.

All the anastomoses were exceedingly fragile from the third to the fifth day. In two cases, in spite of the greatest care, the anastomosis was torn before the manometer examination. Adhesions to neighbouring structures, especially to omentum, were regularly present. During the first few days the site of anastomosis was found almost entirely encircled by portions of the greater omentum. Later, after weeks and months, these adhesions were less numerous, but in only two cases were they entirely absent. In one case, the serous surface being scarified after Wölfler's method, the adhesions were so numerous that it was extremely difficult to identify the site of anastomosis. Anastomoses at the seat of adhesions withstood a higher pressure than those not so supported. In one case a small flap of the greater omentum around the site of a button was sutured, with excellent result.

In regard to button methods, the results were not so favourable. Chlumsky concludes that a button must stay in a dog's bowel at least five days, protecting the site of anastomosis in a purely mechanical manner; if left longer than a week it is apt to cause necrosis. In one case a Murphy button passed *per anum* three days following its application—that is, at a time when its presence was most essential. In another case it caused perforation on the third day. The result with decalcified bone button was still more unsatisfactory. All of these absorbable buttons, particularly Frank's, were absorbed early, or soon passed in a half-digested condition. Hardening or partial decalcification afforded but slight improvement.

In two children, the subjects of gastric fistulae, because of stenosis of the esophagus due to potash burns, the author had the opportunity afforded of introducing into their stomachs small undecalcified bone olives. These were in a stage of advanced digestion after two or three days. Decalcified bone olives, left in the same time, became as soft as butter. In the colon, however, they remained unaltered for from seven to ten days.

J. H. T. WALSH.

Correspondence.

AN APPEAL AGAINST THE BANISHMENT OF SAGS.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—Major W. J. Buchanan, I.M.S., in his *Manual of Jail Hygiene* condemns the *sags*, stating that they are useless as anti-scorbutics. This conclusion I have no doubt he has arrived at from practical experience, but I hope to show that the fault lies not in the *sag* but the way in which the *sag* is cooked.

The value of *sāg*, as to their being useful antiscorbutics or not is a most important point. As if it can be shown that they are antiscorbutics the saving to the Government of India is very considerable. *Sāg* will grow when no other vegetable will. On the other hand if they are useless as antiscorbutics, then prisoners during certain times of the year have to receive lime juice, lime pickles, *anchor*, tamarind pulp, *patwā* or roselles, etc., which in a large number of jails are bought in the markets.

The antiscorbutic properties of vegetables are due to the salts they contain, the most important being the soluble salts.

The following rough experiment will give the amount of salts both soluble and insoluble :—

Take one pound of the vegetable, put it into an iron-pot and place it on a fire and so reduce it to ashes; when cool weigh the ashes; this will give the total quantity of salts in one pound of the vegetable.

Again take another pound and boil it until it is properly cooked, drain the water off and keep. Now take the cooked vegetable and burn it in the same way as the uncooked vegetable; when ashes are cool, weigh.

Now take the water in which the vegetable was cooked and evaporate it, collect the salts and weigh.

Table below gives a few vegetables treated as above :—

| Name. | Uncooked. | Cooked. | Salts in water in which vegetable was boiled in. |
|-----------------------|---------------|---------------|--|
| Cholai (<i>Sāg</i>) | 246 grains .. | 141 grains .. | 106 grains. |
| Turai | 65 " .. | 20 " .. | 42 " |
| China Cabbage | 78 " .. | 35 " .. | 36 " |
| Roman Cabbage | 182 " .. | 67 " .. | 120 " |
| Cauliflower | 190 " .. | 81 " .. | 80 " |

From this table it will be seen that the *sāg* has the largest amount of salts, viz., 246 grains. But when cooked the amount of salts left in the cooked vegetable is reduced to 141 grains; the remainder of the salts, and the most important being soluble, are found in the water in which the vegetable has been cooked, and this is thrown away: the amount of salt thus thrown away is 106 grains. *Sāg*, China cabbage and Roman cabbage are soft leaved vegetables, and when cooked allow their soluble salts to pass rapidly into the water in which they are cooked. Now if by any means we can keep these soluble salts from dissolving in the water and thus being thrown away, the value of the above-named vegetables as antiscorbutics would be greatly raised.

The proper way to cook spinach and *sāg* is to allow them to cook in their own juices, only a teaspoon of water being put into the pot to prevent burning. It is impossible to cook *sāg* this way in jails for obvious reasons, so have adopted the following method :—The vegetables are boiled in water, as usual, for the midday meal, the water in which the vegetable has been cooked and in which are all the most important salts, is not thrown away, but is left in the cooking vessel. The *dāl* for the evening meal is cooked in this water, and so the prisoner gets the benefits of the salts. I have never found that prisoners object to this, and some have told me that the *dāl* is improved.

Cabbages of all sorts I do not believe are any better antiscorbutics than *sāg*, but owing to their leaves being harder and thicker in comparison the amount of soluble salts which gets dissolved in the water during cooking is much less, and thus they appear to be better antiscorbutics, but if the water in which *sāg* are boiled in is used or if the *sāg* are properly cooked, then the *sāg* will be found to be as good an antiscorbutic as the cabbage. Practically cabbages and cauliflowers are considered excellent antiscorbutics, and to settle this point, as to the antiscorbutic properties of *sāg*, which is an important one, an analysis should be made of the salts contained in the *sāg* and compared with the two above vegetables. I feel sure "from practical experience" it would compare favourably; and the reason why the *sāg* has been condemned is not that it has no antiscorbutic salts, which I believe it has in large quantities, but that these salts during the cooking are dissolved more readily than those in the cabbage or cauliflower for reasons already given and so leaves the cooked *sāg* with little or no salts useful as antiscorbutics, the useful salts being in the water and so are thrown away.

CENTRAL JAIL, {
BAREILLY :
April 1900.

I am, &c.,
E. JENNINGS,
Capt., I. M. S.

{We invite the opinions of Medical Officers of Jails on this question.
—Er., I. M. G.]

BOTANICAL NAMES OF PULSES, &c.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

Sir,—I shall be much obliged if you can tell me the botanical names of the chief pulses and peas used as food by the inhabitants of India,

Yours, &c.,

NOVICE.

[The following gives the botanical names of the chief pulses, &c., as given in Church's "Food Grains of India":—

Horse gram, *Dolichos biflorus*, Hindi, *Kulti*. Pigeon Pea, *Cajanus indicus*, Hindi, *Urak*. Haricot beans, *Phaseolus vulgaris*, Hindi, *Loba*, *Bakla*. Mung bean, *Phaseolus mungo*, Hindi, *Mung*. Moth bean, *Phaseolus acutifolius*, Hindi, *Mut*. Lablab bean, *Dolichos lablab*, L., Hindi, *Sita*. Chick pea, gram, *Cicer arietinum*, Hindi, *Chana*. Vetch, *Vicia sativa*, Hindi, *Ankuri*. Vetchling, *Lathyrus sativus*, Hindi, *Kesari*, *Tori*. Pea, *Pisum sativum*, Hindi, *Muttar*. The lentil, *Lens esculenta*, Hindi, *Masur*. —Ed., I. M. G.]

ACETIC ACID AN ANTIDOTE TO CARBOLIC ACID.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

Sir,—I have the honour to ask you to publish the following note on the use of acetic acid as an antidote to carbolic acid.

Once when I was cleaning a wound I had to dip my hand over and over again into carbolic lotion (1 in 40); and I soon found a painful sensation in my arm from fingers to shoulder joint. I then found that I had a scratch on my finger. I applied some acetic acid on a piece of lint, and in about 20 minutes all the pain had disappeared. To test the value of the acetic acid, I painted my hand with four layers of carbolic acid and then applied a piece of cotton wool soaked in acetic acid to see the result. Within three minutes the burning pain had disappeared, and in 45 minutes the white mark of the carbolic had gone leaving only a slight redness behind. I tried the same experiment on my forearm with the same result. I offer these remarks in the hope that they may be useful to my professional brethren.

DIG DISPENSARY, }
BHARATPUR STATE, }
April 1900.

I am, Sir, yours, &c.,
DHURNI DHUR,
Civil Hospital Assistant.

Service Notes.

THE Royal Navy suffers much less than the Army from enteric fever. Out of a force of over 82,000 men there were only 153 cases; while in the same year in the European army in India out of a strength of 61,000 there were no less than 2,000 cases.

THE medical graduates of Edinburgh in Hyderabad have been canvassing strongly in favour of the candidature of Dr. Bryon Bramwell for the chair of Medicine, vacant by death of Sir T. Grainger Stewart.

SIR WILLIAM MACCORMAC writes as follows of penetrating gunshot wounds of the abdomen (*Lancet*, p. 961) :—"I have now seen a large number of cases of abdominal injury in which recovery has followed an expectant treatment, and where without any reasonable doubt the intestines must have been perforated, a few in which the stomach was traversed, and two or three liver injuries. I myself entertain no doubt that in the future a perforating gunshot wound of the abdomen where from the direction taken by the bullet the intestine has almost certainly been traversed is no longer an indication of the necessity of immediate operative interference."

THE correspondent of the *Lancet* writes as follows :—

"Sir William MacCormac and Captain F. A. Symons, R.A.M.C., left last week by the *Norman en route* for England, via Zanzibar and the Suez Canal. Sir William MacCormac's services were, of course, of the greatest value to us, and his genial manner and courtesy will cause him to be greatly missed by the officers of the Royal Army Medical Corps, with whom he was an especial favourite, not only for his well-known abilities, but for the consideration and kindly feeling which he has always exhibited towards us. A man possessing more tact and knowledge of the world it would be difficult to find, and we all trust that he will reach home safely and in good health and will be ready to aid us in our next campaign."

MAJOR G. M. GILES, I.M.S., F.R.C.S., has been appointed Sanitary Commissioner, N.-W. P. and Oudh, in place of Major Thorold, I.M.S., gone on furlough. Major Giles contributes an interesting chapter to the second memoir of the Liverpool School of Tropical Medicine.

A LONG and very interesting résumé of the whole mosquito-malaria theory, being a lecture delivered by Major Ronald Ross at the Royal Institution in London, appears in *Nature* for March 29th. Major Ross says: "In short on studying the matter from every point of view I must confess to being ignorant of any well-established fact about malarial fever, which is not explained by the mosquito theory."

SURGEON-GENERAL R. HARVEY, I.M.S., C.B., D.S.O., does not retire from office of Director-General, I.M.S., till 1902 at the very earliest.

MAJOR W. BABTIE, C.M.G., R.A.M.C., has been awarded the V. C. for his gallantry at the battle of Colenso.

SURGEON-MAJOR-GENERAL W. R. HOOPER, I.M.S., C.I.E., has been elected F.R.C.S., being a member of twenty years' standing.

NEARLY a hundred Medical Officers replied to the Circular offering one year's training in bacteriology at Netley. Captain G. McL. C. SMITH, M.B., has been selected for the present year.

MAJOR JAMES MINNIECE, R.A.M.C., died at Ladysmith, on 17th March of enteric fever. He left India in October last in medical charge of the 5th D.G. He had served in Egypt previously. In his younger days he was one of the strongest men in the Army, and a noted gymnast and athlete.

LIEUTENANT F. S. IRVINE, R.A.M.C., was killed in the action at Bloemfontein water-works. He had only a few months' service.

SURGEON-GENERAL C. E. MCVITIE, I.M.S., Honorary Physician to the Queen, P.M.O., Madras Command, retired from the service on 1st April.

CAPTAIN CLAYTON LANE, I.M.S., has gone to Bengal for civil employ.

THE following appreciative note on Indian Surgery is clipped from an article by Dr. W. S. Caldwell in *Journal of American Medical Association* (March 10th):—

"I am at a loss for an explanation as to the cause of the extreme frequency of vesical calculus in the Far East, especially in China, Ceylon and India, and no one with whom I have conversed on the subject seems able to enlighten me. Of one thing, however, I am well convinced, and that is, that in a country where clean surgery is so hard to do, lithotripsy is the best operation for a vast majority of these patients, and when surgeons become as skilled in the use of the lithotrite as Dr. Park of Jeypore, or Dr. Anderson of Agra, cutting operations of all kinds will be largely dispensed with in the management of cases of stone in the bladder. In fact, after seeing the work of these two men, I believe that even M. Guzon of Paris, in whose clinical service I have had a considerable observation, could widen his field for the use of the lithotrite, greatly to the benefit of many of his patients, on whom he now does a lithotomy."

THE species of mosquito sent home last year to Major Giles, I.M.S., from Bakloh, by Captain Victor Lindesay, I.M.S., turns out to be a new species of anopholes. It is now described in Major Giles' "Mosquito Handbook" as *anopheles lindesayi*. It is very important to know that a species of anopholes exists at such an elevation as Bakloh; it is probable that it will also be found in other hill stations.

CAPTAIN E. S. PECK, I.M.S., has been sent to the Punjab for inoculation work against Plague.

SIR ANTONY MACDONNELL in his speech on the Budget stated that the plague at Mauaima, in the Allahabad district, was almost at an end, "owing to the devoted labours of Major Stevenson, I.M.S., and his assistants."

LIEUTENANT-COLONEL G. F. THOMAS, I.M.S., has been appointed the first Inspector-General of Jails, Burma. Major R. E. Davis, I.M.S., is, we understand, on return from furlough, to become Civil Surgeon, Rangoon.

MAJOR D. SIMPSON, I.M.S., Civil Surgeon of Coimbatore, has taken the M.D. of Aberdeen. His thesis was on Elephantiasis Arabum.

THE subject chosen for the Jacksonian Prize of the Royal College of Surgeons, England, for 1901, is one which will be attractive to Medical Officers of the Army. It is "The Diagnosis and Treatment of Bullet Wounds of the Chest and Abdomen."

THE Government of India has agreed to place Captain R. H. Elliot, I.M.S., M.B., F.R.C.S., on special duty to continue his work on snake-poisons. Professor Fraser has kindly offered the use of his laboratory in Edinburgh to Captain Elliot.

LIEUTENANT-COLONEL LEWTAS, I.M.S., at home on furlough, who offered his services at Netley, has been transferred to Woolwich Hospital to which large numbers of sick and wounded from the Cape are being sent.

Gazette Notifications.

GOVERNMENT OF INDIA.

Lieutenant-Colonel D. WILKIE, I.M.S., M.B., is granted three months' privilege leave from 18th April, 1900. Major W. J. BUCHANAN, I.M.S., M.B., to officiate as Statistical Officer to Government of India in the Medical Department, vice Lieutenant-Colonel D. WILKIE, I.M.S.

The services of Captain A. A. GIBBS, I.M.S., are placed temporarily at the disposal of Government of Bombay.

Lieutenant-Colonel F. F. McCARTIE, I.M.S., C.I.E., Assay Master, Calcutta, is granted special leave for six months. Major J. LLOYD JONES, I.M.S., to officiate.

Colonel T. J. McGANN, I.M.S., is granted the rank of Surgeon-General while officiating as P. M. O., Madras Command.

Lieutenant-Colonel R. N. STOKER, I.M.S., and Lieutenant-Colonel A. S. G. JAYAKAR, I.M.S., are permitted to retire from the service.

Honorary Captain W. H. LEWRY, I.M.S.D., and Honorary Captain W. R. SCROGGIN, I.M.S.D., are permitted to retire from the service.

The services of Captain J. S. STEVENSON, I.M.S., are placed at disposal of N.W.P. and Oudh for employment on Plague duty.

Captain F. A. SMITH, M.B., I.M.S., is appointed to act as Agency Surgeon (2nd class), and posted to Maskat.

BOMBAY.

The following officers are appointed Justices of the Peace for the Town of Bombay:

Lieutenant Colonel H. W. B. BOYD, I.M.S., F.R.C.S.I.

Major T. D. C. BARRY, I.M.S.

Captain S. H. BURNETT, I.M.S., M.B.

Major J. CRIMMIN, I.M.S., V.C.

Major H. P. BISMOCK, I.M.S., M.D.

Major H. HERBERT, I.M.S., F.R.C.S.

Lieutenant-Colonel W. K. HATCH, I.M.S., F.R.C.S.

Lieutenant-Colonel W. H. HENDERSON, I.M.S., F.R.C.S.

Major J. LLOYD JONES, I.M.S., M.B.

Major R. W. S. LYONS, I.M.S., M.D.

Major G. H. L. MEYER, I.M.S., M.D.

Major A. MILNE, I.M.S., M.B.

Major W. H. QUICKE, I.M.S., F.R.C.S.

Lieutenant-Colonel G. WATERS, I.M.S.

Lieutenant-Colonel J. S. WILKINS, I.M.S., D.S.O.

ASSAM.

Major E. A. W. HALL, I.M.S., is transferred to Lakimpur, vice Major E. H. W. CARROLL, I.M.S., granted furlough.

Captain A. LEVENTON, I.M.S., is transferred to Darrang District as Civil Surgeon.

BENGAL.

Captain C. R. STEVENS, I.M.S., F.R.C.S., is appointed to act as Superintendent of the Central Jail, Bhagulpur, vice Major W. J. BUCHANAN, I.M.S.

Captain A. R. S. ANDERSON took over charge of Ranchi Jail on 6th April, relieving Captain W. CARR, I.M.S.

N.-W. P. AND OUDH.

Lieutenant-Colonel J. ANDERSON, M.B., Principal, Medical School, Agra, is appointed a Fellow of Allahabad University.

MILITARY DEPARTMENT.

Captain J. A. HAMILTON, I.M.S., M.B., to medical charge of 3rd Bengal Cavalry.

Captain T. B. KELLY, I.M.S., to officiating medical charge of 6th Bengal Cavalry.

Captain C. D. DAWES, I.M.S., to officiating medical charge of 3rd Bengal Infantry.

Captain C. A. LANE, M.D., I.M.S., to the officiating medical charge of 5th Bengal Infantry.

Lieutenant-Colonel L. A. WADDELL, I.M.S., to the sub. (*pro tem.*) medical charge of 9th Gurkha Rifles.

Lieutenant D. McCAY, I.M.S., to the officiating medical charge of 18th Bengal Infantry.

Lieutenant C. F. WEINMAN, I.M.S., to officiating medical charge of 4th Gurkha Rifles.

Lieutenant-Colonel A. W. CARLETON, R.A.M.C., is granted sick leave.

THERAPEUTIC NOTES.

We have received specimens of a new surgical dressing, i.e., PETANELLI. It is a fibrous derivative of peat, and is said to possess the natural antiseptic properties of peat. When saturated with blood or pus, it is said no trace of putrefactive change can be detected. It is not expensive and can be used as a wool surgical dressing, or for stuffing mattresses. It is also used for manufacture of accouchement sheets, sanitary towels, &c. The manufacturers are Messrs. Paté, Burke & Co., 6, Wool Exchange, London, E.C.

Messrs. Burroughs, Wellcome & Co. have sent us specimens of PROTARGOL tablets. This is an extremely convenient way of carrying about this very useful drug.

Methylene Blue in Malaria.—In certain individuals, the administration of quinine gives rise to unpleasant symptoms, says J. W. P. Smithwick in the February number of *Medical Archives*. The untoward results have caused investigators to search for some substitute for quinine. For several years certain physicians have been experimenting with methylene blue, and have found it to possess very decided antimalarial properties. The medicinal preparation is a simple hydrochlorate of tetramethylthionin and is free from arsenic and zinc. It is usually administered in two-grain doses six times a day, in the form of capsules or pills. It will appear in the urine about an hour afterward, making it intensely blue. It acts as a diuretic, which is a valuable consideration in cases where there is a tendency to hematuric complication.

A table of fifty cases of different types of malaria accompanies the article. Of these, there were 21 cases of quotidian, four of tertian, three of quartan, five of tertio-autumnal, three of hemorrhagic and one of double quotidian malarial fever. All but seven recovered; three of these refused to take methylene blue after the first day, and the remaining four were in bad physical condition, their deaths resulting from organic disease. The remedy has a two-fold effect in the hemorrhagic type of malarial fever—that of a parasiticide and a diuretic. A relapse in one instance responded to the treatment, in this respect differing from the usual results of quinino administered under the same condition. The treatment was continued ten days after the last chill. He concludes that cases need not be selected on account of idiosyncrasies, as the methylene blue produces no bad effects if given intelligently; he believes it to be a perfect substitute for quinine. It is of especial value in the malaria occurring during pregnancy, as it has no oxytotic effect and increases elimination by the kidneys.—*Jour. Amer. Med. Assoc.*

The Surgical Treatment of Perforation of the Bowel in Typhoid Fever.—The *Philadelphia Medical Journal* of November 4th, 1899, contains an article by Keon on this topic which concludes as follows:

1. The surgeon should be called in consultation the moment that any abdominal symptoms indicative of possible perforation are observed.

2. If it is possible to determine the existence of the preperforative stage, exploratory operation should be done under cocaine anaesthesia before perforation, shock, and sepsis have occurred.

3. After perforation has occurred, operation should be done at the earliest possible moment, provided

4. That we wait till the primary shock, if any be present, has subsided.

5. In a case of suspected but doubtful perforation, a small exploratory opening should be made under cocaine to determine the existence of a perforation, and if hospital facilities for a blood-count and for immediate bacteriological observation exist, their aid should be invoked.

6. The operation should be done quickly but thoroughly, and in accordance with the technique already indicated.

7. The profession at large must be aroused to the possibility of a cure in nearly, if not quite, one-third of the cases of perforation, provided speedy surgical aid is invoked.—*Therapeutic Gazette.*

Pathology and Therapeutics of Lamellar Cataract. BAEMER.—In the 10,000 patients treated at Hirschberg's clinic in the last thirty years, 153 had lamellar cataract, bilateral in all but seven, and rhachitis was evident in 88·75 per cent.—degenerate teeth, 58·4 per cent.; convulsions, 40·4 per cent., and general rhachitis in 36 per cent. This extensive experience has proved that dissection is the sovereign method of treating lamellar cataract in children. Older persons are treated with the flap incision and round pupil. Baehr describes a number of observations which demonstrate the injury to the eyesight from iridectomy, in these cases, and the pronounced improvement when the lens was removed, consecutive to the original iridectomy. The myopia usually accompanying lamellar cataract increases after iridectomy, and with it come central changes in the retina and further disturbances of sight. Removal of the lens obviates these dangers and also prevents the indistinctness of the image from diffusion of light, etc., which disturb the sight to such an extent that subjects who have had iridectomy done in youth return for relief later.—*Jour. Amer. Med. Assoc.*

Total Splenectomy.—F. LLOBET.—The spleen removed from a young woman in the case described weighed 2,500 grams, was 31 cm. in circumference, and was attached to the rear wall of the abdomen with a pedicle 30 cm. long and 6 in diameter. It was also adherent to the anterior wall and contained cancerous nodules. Two months afterward, analysis of the blood showed 2,800,888 red, to 14,000 whites, and eleven days later, 4,600,000 reds. The patient is now in perfect health, seven months since operation.—*Jour. Amer. Med. Assoc.*

Harmless Sleeping-Draught for Nervous Insomnia.—To a tumbler of sour curds and whey add a teaspoonful of carbonate of soda, or as much more as is required to make it alkaline. Sweeten it with sugar or treacle, and grate some nutmegs on the top. It may be taken cold, but is best hot.—*Practitioner.*

Treatment of Diabetic Coma.—The treatment of diabetic coma is both preventive and active. Proper diet, of course, does much towards the prevention of this serious complication, but it is well to remember that should any premonitory signs of drowsiness come on, or should the urine give a strong reaction with perchloride of iron, very large doses of bicarbonate of sodium should be given for the purpose of overcoming the intoxication which is accumulating. If the bowels are at all confined, as much as an ounce of bicarbonate of sodium, dissolved in milk, should be given in each twenty-four hours. Should constipation be present, a full purgative dose of sulphate of sodium, one-half to one ounce, is to be given for the purpose of aiding elimination by the bowels; and hypodermic injections of ether used for their valuable stimulating effect upon the heart and respiration. The value of intravenous injections of normal saline solutions into a vein under these circumstances has been pointed out. In other cases, in place of a normal saline solution, a fluid composed of 150 grains of bicarbonate of sodium and 100 grains of sodium chloride dissolved in a quart of water may be used for this purpose.—*Practitioner.*

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